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SUCTION TOOL FOR ELECTRIC VACUUM CLEANER

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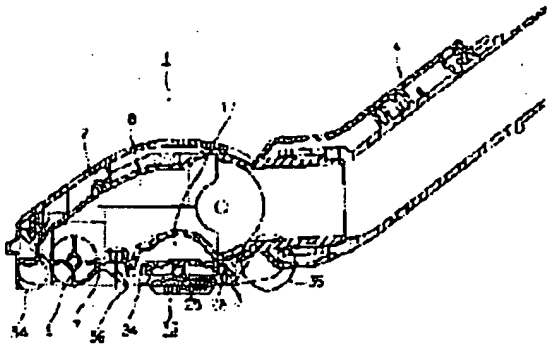
Abstract of **JP10014829**

PROBLEM TO BE SOLVED: To make simultaneous operation of sucking the dust and rubbish and wiping of the surface to be cleaned without imposing an over-load on a motor-driven blower or contaminating the surface to be cleaned.

SOLUTION: An accommodation part 17 is formed in a position adjacent to a suction hole 7 formed in the bottom surface of the body 1 of a suction tool, and a base 24 is furnished rotatably, whose one side face fitted with a wiping member 33 capable of collecting the dust and rubbish and other side face with no wiping member attached are selectively exposed at the bottom surface of the tool body 1, and a pivot shaft 25 is installed on the base 24 in a position eccentric about the width in the direction fore and aft, and its shorter side is rotated within the accommodation part 17.



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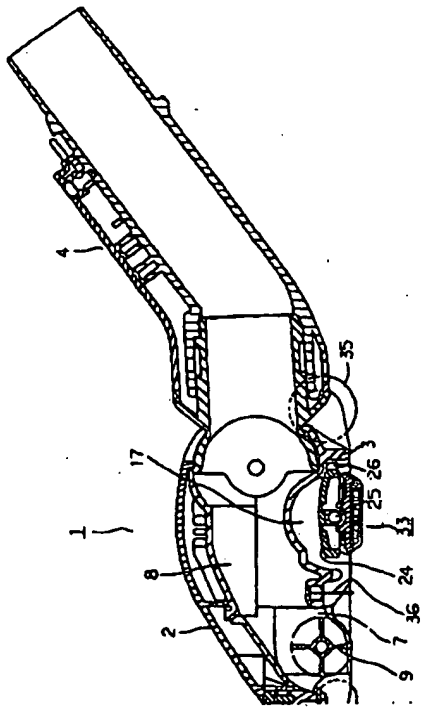
(54)【発明の名称】　電気掃除機用吸込具

(57)【要約】

【課題】電動送風機に過負荷をかけたり、被掃除面を汚すことなく、塵埃の吸引と被掃除面の拭き掃除とを同時に行うことができる電気掃除機用吸込具を提供することを課題とする。

【解決手段】吸込具本体１底面の吸気口７に隣接する位置に形成した収納部17に、塵埃捕集性を有する拭き部材33が装着された一側面側及び拭き部材33が装着されない他側面が選択的に吸込具本体１底面側に露出する基台24を回動自在に設け、基台24の枢支軸25を基台24の前後方向幅に対して偏心した位置に配設し、その短手側を収納部17内を回転させる電気掃除機用吸込具。



【特許請求の範囲】
【請求項1】　底面に吸気口を形成した吸込具本体と、該吸込具本体の吸気口に隣接する位置に形成された収納部と、該収納部に枢支軸にて回動自在に支持され、塵埃捕集性を有する布状体が装着された一側面側及び布状体が装着されない他側面側を選択的に吸込具本体底面側に露出する基台とを備え、前記枢支軸を、基台の前後方向幅に対して偏心した位置に配設し、その短手側を収納部内を回転させたことを特徴とする電気掃除機用吸込具。
【請求項2】　底面に吸気口を形成した吸込具本体と、該吸込具本体の吸気口に隣接する位置に形成された収納部と、該収納部に枢支軸にて回動自在に支持され、塵埃捕集性を有する布状体が装着された一側面側及び布状体が装着されない他側面側を選択的に吸込具本体底面側に露出する基台とを備え、前記布状体を吸込具本体底面側に露出した状態で、吸込具本体の押し動作時に、被掃除面との摩擦により基台が吸込具本体後方側へ回動するのを阻止する阻止手段を設けたことを特徴とする電気掃除機用吸込具。
【請求項3】　底面に吸気口を形成した吸込具本体と、該吸込具本体の吸気口に隣接する位置に形成された収納部と、該収納部に枢支軸にて回動自在に支持され、塵埃捕集性を有する拭き部材が着脱自在に装着される一側面側及び拭き部材が装着されない他側面側を選択的に吸込具本体底面側に露出する基台とを備え、前記枢支軸を、基台の前後方向幅に対して偏心した位置に配設し、その短手側を収納部内を回転させたことを特徴とする電気掃除機用吸込具。
【請求項4】　底面に吸気口を形成した吸込具本体と、該吸込具本体の吸気口に隣接する位置に形成された収納部と、該収納部に枢支軸にて回動自在に支持され、塵埃捕集性を有する拭き部材が着脱自在に装着される一側面側及び布状体が装着されない他側面側を選択的に吸込具本体底面側に露出する基台とを備え、前記拭き部材を吸込具本体底面側に露出した状態で、前記吸込具本体の押し動作時に、被掃除面との摩擦により基台が吸込具本体後方側へ回動するのを阻止する阻止手段を設けたことを特徴とする電気掃除機用吸込具。
【請求項5】　底面に吸気口を形成した吸込具本体と、該吸込具本体の吸気口に隣接する位置に形成された収納部と、該収納部に枢支軸にて回動自在に支持され、塵埃捕集性を有する拭き部材が着脱自在に装着される一側面側及び拭き部材が装着されない他側面側を選択的に吸込具本体底面側に露出する基台とを備え、前記拭き部材を枢支軸に着脱自在に装着したことを特徴とする電気掃除機用吸込具。
【発明の詳細な説明】
【0001】
【発明の属する技術分野】本発明は、電気掃除機に接続する吸込具の改良に関する。
【0002】
【従来の技術】従来、この種床用吸込具として、吸込具本体下面に雑巾やモップ等を装着したものが、例えば、実開昭62-184846号公報(A47L 9/02)及び実公昭50-38223号公報(92(3)D101.1)等にて知られている。
【0003】しかしながら、これらの吸込具は、雑巾やモップ等により吸込具本体下面全体を覆っているので、塵埃は電気掃除機に吸塵されることなく、雑巾やモップ等に付着し、掃除動作に伴って、塵埃は雑巾やモップに付着したまま被掃除面上を移動し、被掃除面を傷つける欠点がある。また、雑巾やモップによって吸気抵抗が増大し、掃除機本体の吸気量が低下するため、塵埃の吸着能力が低下すると共に、電動送風機に過負荷が加わるなどの欠点があった。
【0004】そこで、本願出願人は、吸込具本体底面に吸気口を前後に並設し、後方の吸気口に拭き部材を装着した吸込具を特願平7－104429号にて提案した。この吸込具においては、後方の吸気口に拭き部材を上下動自在に設けており、フローリング等を掃除する際には、拭き部材を吸気口から突出させ、前後の吸気口から吸塵し、拭き部材にて塵埃を吸着させると共に、フローリング等を拭く動作を同時に行う。また、畳や絨毯等を掃除する際には、拭き部材を後方の吸気口内に収納し、拭き部材が被掃除面にふれないようにして前方の吸気口から吸塵するものである。
【0005】しかしながら、この構成においては、拭き部材を端に上下動させるだけであるから、絨毯等を掃除する際には、拭き部材を後方の吸気口に収納した状態であっても、被掃除面が拭き部材に接触し、拭き部材を不必要に汚したり、拭き部材に付着した汚れによって被掃除面が汚れるおそれがあった。
【0006】
【発明が解決しようとする課題】本発明は、上記欠点に鑑みなされたもので、電動送風機に過負荷をかけたり、被掃除面を汚すことなく、塵埃の吸引と被掃除面の拭き掃除とを同時に行うことができる電気掃除機用吸込具を提供することを課題とする。
【0007】
【課題を解決するための手段】本発明の第1の手段は、底面に吸気口を形成した吸込具本体と、該吸込具本体の吸気口に隣接する位置に形成された収納部と、該収納部に枢支軸にて回動自在に支持され、塵埃捕集性を有する布状体が装着された一側面側及び布状体が装着されない他側面側を選択的に吸込具本体底面側に露出する基台とを備え、前記枢支軸を、基台の前後方向幅に対して偏心した位置に配設し、その短手側を収納部内を回転させたことを特徴とする。
【0008】本発明の第2の手段は、底面に吸気口を形

位置に形成された収納部と、該収納部に枢支軸にて回動自在に支持され、塵埃捕集性を有する布状体が装着された一側面側及び布状体が装着されない他側面側を選択的に吸込具本体底面側に露出する基台とを備え、前記布状体を吸込具本体底面側に露出した状態で、吸込具本体の押し動作時に、被掃除面との摩擦により基台が吸込具本体後方側へ回動するのを阻止する阻止手段を設けたことを特徴とする。

【０００９】本発明の第３の手段は、底面に吸気口を形成した吸込具本体と、該吸込具本体の吸気口に隣接する位置に形成された収納部と、該収納部に枢支軸にて回動自在に支持され、塵埃捕集性を有する拭き部材が着脱自在に装着される一側面側及び拭き部材が装着されない他側面側を選択的に吸込具本体底面側に露出する基台とを備え、前記枢支軸を、基台の前後方向幅に対して偏心した位置に配設し、その短手側を収納部内を回転させたことを特徴とする。

【００１０】本発明の第４の手段は、底面に吸気口を形成した吸込具本体と、該吸込具本体の吸気口に隣接する位置に形成された収納部と、該収納部に枢支軸にて回動自在に支持され、塵埃捕集性を有する拭き部材が着脱自在に装着される一側面側及び布状体が装着されない他側面側を選択的に吸込具本体底面側に露出する基台とを備え、前記拭き部材を吸込具本体底面側に露出した状態で、前記吸込具本体の押し動作時に、被掃除面との摩擦により基台が吸込具本体後方側へ回動するのを阻止する阻止手段を設けたことを特徴とする。

【００１１】本発明の第５の手段は、底面に吸気口を形成した吸込具本体と、該吸込具本体の吸気口に隣接する位置に形成された収納部と、該収納部に枢支軸にて回動自在に支持され、塵埃捕集性を有する拭き部材が着脱自在に装着される一側面側及び拭き部材が装着されない他側面側を選択的に吸込具本体底面側に露出する基台とを備え、前記拭き部材を枢支軸に着脱自在に装着したことを特徴とする。

【００１２】

【発明の実施の形態】本発明の第１の実施の形態を図１乃至図１０に基づいて以下に詳述する。

【００１３】１は吸込具本体で、上ケース２と下ケース３とから構成され、後部中央に、図示しない掃除機本体に接続される接続管４を回動自在に支持すると共に、接続管４に対して左右両側に電動機収納室５と電装品収納室６を形成している。７は前記吸込具本体１底面前方位置に形成された吸気口で、上ケース２と下ケース３との間に形成した吸込路８を介して接続管４に連通している。

【００１４】９は前記吸込口７に臨ませて軸受け部10により吸込具本体１に回転自在に支持された回転ブラシで、一端側にプーリー11を装着している。12は前記吸込具本体１後部の電動機収納室５に配設される電動機で、前記回転ブラシ９のプーリー11との間に図示しないベルトを架設し、回転ブラシ９を回転駆動するようになっている。

【００１５】13は前記回転ブラシ９のプーリー11及びプーリー11近傍の軸受け部10を吸込具本体１底面側から覆う固定部材で、一端側に形成した係合溝14に、吸込具本体１に形成した係合突起15を係合すると共に、他端側をネジ16により吸込具本体１に固定することで、吸込具本体１に着脱自在に装着されている。

【００１６】17は前記吸込具本体１底面略中央部に吸込具本体１底面から上方に凹設された収納部で、後述する基台24が回転自在に支持されている。18は前記吸込具本体１底面に凹設され、前記収納部17に連通する凹部で、指を挿入して後述する拭き部材33を基台24から取り外すようになっている。

【００１７】19は前記吸込具本体１一側の収納部17に隣接する位置に形成された凹所で、収納部17と凹所19は区画壁20により区画されている。21は前記区画壁20の吸込具本体１底面側に装着される支持片で、区画壁20と支持片21との間で後述する基台24の枢支軸25を回動自在に軸支している。前記支持片21は一端側に形成した係合爪22を吸込具本体１に係合し、他端側を前記固定部材13により吸込具本体１底面側から押さえることにより吸込具本体１に着脱自在に装着されている。23は前記凹所19に延設した基台24の枢支軸25に固定される操作体で、該操作体23を回転操作することにより基台24を回転するようになっている。

【００１８】24は前記収納部17に配設される低摩擦抵抗性を有する合成樹脂製の基台で、収納部17両側に枢支された枢支軸25に回り止めして装着され、収納部17に回動自在に支持されている。前記基台24は平板状に形成され、その一側面に後述する拭き部材33が着脱自在に装着されると共に、前記一側面と相対向する他側面は基台24の前後方向の略中央部が最も突出するように略円弧状として滑りやすく形成しており、基台24の他側面を吸込具本体１底面側に露出した状態における移動性を向上するようになっている。前記枢支軸25は基台24の偏心した位置に装着され、その短手側が収納部24内を回転するように、基台24の一側に回転規制用の突部26が形成されている。前記突部26は、図１及び図３に示すごとく、後述する拭き部材33を吸込具本体１底面側に向けた状態で、吸込具本体１を押し操作した際に基台24の回転を規制する位置、即ち、図１及び図３において吸込具本体１後方側に位置するように形成されている。

【００１９】27は合成樹脂製の支持体で、上面に形成した係止爪28を前記枢支軸25に係止して基台24に着脱自在に装着されるようになっている。29は前記支持体27の凹部18に位置する部分に形成された手掛部で、該手掛部29に指をかけて支持体27を基台24から取り外すようになっ

た係止部材で、先端が鉤状に形成された弾性を有する合成樹脂製の繊維状体を多数有している。

【００２０】31は前記基台24の下面側に貼着された弾力性を有する材料からなる弾性体で、本実施の形態では、柔軟な弾性を有する繊維を多数植毛した材料、いわゆる起毛体を用いている。前記弾性体31は被掃除面の凹凸に沿うように比較的弾力性の大きい材料を用いることが好ましく、上記材料以外に、例えば、スポンジでもよい。

【００２１】32は布状体で、前記弾性体31を覆った状態で、両端を係止部材30の多数の繊維状体に引っかけて係止するようになっており、支持体27を基台24に装着した際、布状体32両端が基台24と支持体27との間に挟持されるようになっている。前記布状体32は、塵埃捕集性、保塵性を有する材料、具体的には、不織布、布、紙等にて形成されており、本実施の形態では、ポリエステル、ポリプロピレン等の微細繊維からなる不織布にて形成され、さらに保塵性を向上するために微細繊維に静電気処理を施している。

【００２２】前記支持体27、弾性体31及び布状体32により拭き部材33を構成している。

【００２３】34は前記吸込具本体１下面前方に回転自在に軸支された前車輪、35は前記吸込具本体１下面後方に回転自在に軸支された後車輪で、拭き部材33が吸込具本体１底面側に位置するように基台24を回動させた状態で、両車輪34、35の最下位置が拭き部材33下面より上方に位置し、且つ拭き部材33が収納部17に収納され、基台24が吸込具本体１底面側に位置するように基台24を回動させた状態で、両車輪34、35の最下位置が基台24下面より下方に位置するようになっている。

【００２４】36は前記吸込具本体１底面の吸気口７と拭き部材33との間に配設されたフラップで、ゴム等の弾性を有する材料から形成されており、このフラップ36は、拭き部材33が吸込具本体１底面側に位置するように基台24を回動させた状態で、フラップ36の最下位置が拭き部材33下面より上方に位置し、且つ拭き部材33が収納部17に収納され、基台24が吸込具本体１底面側に位置するように基台24を回動させた状態で、フラップ36の最下位置が基台24下面より下方に位置するようになっている。

【００２５】37は前記吸込具本体１後部の基板収納室６に収納される安全スイッチで、その検出部である回転ローラ38を収納部17に隣接する位置から吸込具本体１底面に突出している。前記安全スイッチ37は、吸込具本体１を被掃除面に接地した際、回転ローラ38が被掃除面に押されて吸込具本体１方向に移動し、スイッチ39を操作して回転ブラシ９駆動用電動機12を駆動可能な状態とすると共に、吸込具本体１を被掃除面から持ち上げた際、回転ローラ38が吸込具本体１から突出する方向に移動し、スイッチ39を操作して電動機12を駆動不能な状態にするようになっている。

い、布状体32両端を支持体27に設けた係止部材30の多数の繊維状体に引っかけて係止する。この状態で、支持体27の係止爪28を基台24の枢支軸25に係止し、拭き部材33を基台24に装着する。

【００２７】フローリング等、拭き掃除を必要とする被掃除面を掃除する際には、図１に示すごとく、拭き部材33が吸込具本体１底面側に位置するように基台24を回動させ、掃除機本体を作動させて吸込具本体１を移動させる。吸込具本体１は前方へ移動させる際に被掃除面に強く押しつけられ、逆に後方へ移動させる際には、吸込具本体１が浮き気味になるため、拭き操作は、吸込具本体１を前方に移動させる際に主に行われ、この状態では、比較的大きなゴミや塵埃は、吸気口７から吸引され、微細な塵埃は拭き部材33の布状体32に捕集されると共に、被掃除面に付着した油汚れ等が拭き部材33にて拭き取られる。布状体32はその繊維に静電処理を施しているので、塵埃の捕集性がより向上する。

【００２８】拭き部材33は吸気口７に隣接する位置に配設され、吸気口７を覆っていないので、掃除機本体の電動送風機の冷却に十分な空気を吸引することができ、電動送風機が過負荷となるのを防止することができる。

【００２９】布状体32の両端は、係止部材30により係止されると共に、基台24と支持体27との間で挟持されているので、掃除に伴う押し引き操作による支持体27からの布状体32の外れを防止することができる。

【００３０】この拭き部材33が吸込具本体１底面側に位置する状態では、前車輪34と後車輪35は浮いた状態となり、砂等が落ちていても砂等が両車輪34、35に押されて被掃除面を傷つけることがなく、砂等は拭き部材33の前方に配設したフラップ36によって拭き部材33への付着が阻止され、吸気口７から掃除機本体に吸引される。

【００３１】基台24は、突部26によって吸込具本体１を押し操作した際に基台24の回転を規制するようになっているので、拭き操作時に特に力が加わる吸込具本体１の押し操作時に基台24が回動することがなく、基台24が不用意に回動して基台24によって被掃除面を傷つけることがない。

【００３２】布状体32が汚れた場合には、拭き部材33を吸込具本体１底面側に位置させた状態で、凹所18に指を挿入して支持体27の手掛部29を把持し、支持体27を引くことにより係止爪28と枢支軸25との係合を外して新しい布状体32と交換する。

【００３３】万一交換する布状体32がない場合には、布状体32を取り外した状態の拭き部材33を基台24に装着し、拭き部材33を吸込具本体１底面側に位置させた状態で拭き操作を行う。拭き部材33は布状体32を取り外した状態では、弾性体31が被掃除面と接触し、弾性体31は起毛体を用いているので、弾性体31により被掃除面を拭き掃除することができる。拭き部材32は基台24に対して着

を掃除した後、拭き部材33を基台24から取り外して弾性体31を洗浄することができる。

【００３４】また、万一基台24が破損し、基台24を交換する際には、固定部材13を固定するネジ16を外して固定部材13を吸込具本体１から取り外す。固定部材13を取り外した状態で、支持片21を吸込具本体１から取り外し、枢支軸25を支持片21と区画壁20との間に支持された側から取り外し、基台24を吸込具本体１から取り外す。そして、新たな基台24を吸込具本体１に装着し、支持片21を吸込具本体１に装着して基台24の枢支軸25を支持片21と区画壁20との間に支持し、さらに固定部材13を吸込具本体１に装着して固定部材13をネジ16にて固定する。上述した固定部材13を取り外した状態では、回転ブラシ９を吸込具本体１から取り外して回転ブラシ９に絡みついた糸屑等を除去することができる。

【００３５】畳や絨毯等の被掃除面を掃除する際には、操作部23を操作して基台24を回転させ、拭き部材33を収納部17に収納して基台24を吸込具本体１底面側に位置させる。この拭き部材33の収納状態では、前車輪34及び後車輪35が被掃除面に接地し、吸込具本体１の移動性を良好にする。また、吸込具本体１底面側に向く基台24を、吸込具本体１前後方向の略中央部が最も低くなる略円弧状に形成しているので、被掃除面との接触抵抗が低下し、且つ基台24を低摩擦抵抗性を有する合成樹脂にて形成しているので、絨毯等を掃除する際の移動性が一層向上する。

【００３６】拭き部材33の不要な畳や絨毯等の掃除の際には、拭き部材33が収納部17に収納された状態となるので、拭き部材33の布状体32が被掃除面に接触して不必要に汚れることがないと共に、拭き部材33の汚れが絨毯等に付着して絨毯等が汚れることがない。

【００３７】基台24は偏心した位置に枢支軸25を装着し、その短手側が収納部17内を回転するように構成したので、収納部17の高さを小さくすることができ、吸込路８が狭隘化するのを防止することができる。

【００３８】本実施の形態では、基台24を低摩擦抵抗性を有する合成樹脂にて形成したが、基台24の拭き部材33が装着される面と相対向する面に低摩擦抵抗性材料を貼着する構成としてもよい。

【００３９】また、図１１乃至図１４に示すごとく、基台24に、吸込具本体１の前後方向に多数の溝40または突条41を形成してもよく、基台24の拭き部材33が装着される面と相対向する面を、シボ加工等により微細な凹凸を有する粗面に加工してもよい。これらの構成では、絨毯等の被掃除面との接触面積が低下するため、移動性を向上することができる。

【００４０】尚、上述した第１の実施の形態では、基台24と拭き部材33を別体にて構成し、基台24に対して拭き部材33を着脱自在としたが、図１５乃及び図１６に示す第２の実施の形態のごとく、基台24と拭き部材33を一体形成してもよい。

【００４１】図１５及び図１６に基づいて第２の実施の形態を詳述する。尚、第１の実施の形態と同一部品は同一符号を付して説明を省略する。

【００４２】42は吸込具本体１の収納部17に回動自在に支持される略平板状の基台で、低摩擦抵抗性を有する合成樹脂にて形成されている。43は前記基台42の一側面に貼着される弾力性を有する材料からなる弾性体で、第１の実施の形態と同様にいわゆる起毛体を用いている。

【００４３】44は前記基台42の前記一側面に隣接する側面に貼着された係止部材で、第１の実施の形態と同様に先端が鉤状に形成された弾性を有する合成樹脂製の繊維状体を多数有している。45は前記基台42の係止部材44が貼着された側面と相対向する側面に形成された凹部46に貼着された係止部材で、前記係止部材44と同一の材料にて構成されている。

【００４４】47は布状体で、前記弾性体43を覆った状態で、両端を係止部材44、45の多数の繊維状体に引っかけて係止するようになっている。前記布状体47は、第１の実施の形態と同様に、塵埃捕集性及び保塵性を有する材料にて構成されている。

【００４５】前記弾性体43、係止部材44、45及び布状体47により拭き部材48を構成している。

【００４６】而して、フローリング等、拭き掃除を必要とする被掃除面を掃除する際には、拭き部材48が吸込具本体１底面側に位置するように基台42を回動させ、掃除機本体を作動させて吸込具本体１を移動させる。拭き操作は、吸込具本体１を前方に移動させる際に主に行われるので、この状態では、比較的大きなゴミや塵埃は、吸気口７から吸引され、微細な塵埃は拭き部材48の布状体47に捕集されると共に、被掃除面に付着した油汚れ等が拭き部材48にて拭き取られる。

【００４７】布状体47が汚れた場合には、拭き部材48を吸込具本体１底面側に位置させた状態で、布状体47と係止部材44、45との係合を外し、布状体47を取り外して新しい布状体47と交換する。

【００４８】万一交換する布状体47がない場合には、布状体47を取り外し、弾性体43を吸込具本体１底面側に向けた状態で、拭き掃除を行う。この状態では、弾性体43が被掃除面と接触し、弾性体43は起毛布を用いているので、弾性体43により被掃除面を拭き掃除することができる。拭き部材48が装着された基台42は吸込具本体１に対して着脱自在に構成しているので、弾性体43によって被掃除面を掃除した後、基台42を吸込具本体１から取り外して弾性体43を洗浄することができる。

【００４９】図１７乃至図２０は本発明の第３の実施の形態を示し、基台24の反転操作構造を第１の実施の形態との相違とするものである。第１の実施の形態と同一部品は同一符号を付して説明を省略する。

【００５０】43は吸込具本体１に回動自在に枢支された

操作レバーで、その端部に形成した操作部50を吸込具本体１上面に突出している。51は操作レバー49の枢軸で、基台24の枢支軸25との間にベルト52を架設し、操作レバー49の回動を基台24の枢支軸25に伝達し、基台24を反転操作するようになっている。53は前記操作レバー49の枢軸51と同心状に形成された円弧面で、操作レバー49を、拭き部材33が吸込具本体１底面側に向く位置と基台24が吸込具本体１底面側に向く位置に回動させた状態で、吸込具本体１に貼着した弾性を有する係止体54が係脱自在に係合する係止溝55を有し、係止溝55に係止体54を係合して操作レバー49及び基台24の回転を規制するようになっている。

【００５１】本第３の実施の形態は、吸込具本体１上面側から操作レバー49により基台24の回転を操作することができ、操作性を向上することができる。その他の作用は、第１の実施の形態と同様であるので、説明を省略する。

【００５２】本発明の第４の実施の形態を図２１乃至図２３に基づいて詳述する。尚、第１の実施の形態と同一部品は同一符号を付して説明を省略する。

【００５３】56は吸込具本体１底面の吸気口７後方位置に凹設された収納部で、一側が開口され、該開口から後述する基台58が収納部56に着脱自在に装着されるようになっている。57は前記収納部56の前後壁に形成された案内溝で、後述する基台58の案内リブ59が係合して基台58を収納部56に案内するようになっている。

【００５４】58は低摩擦抵抗性を有する合成樹脂製の基台で、前後に前記収納部56の案内溝57に係合する案内リブ59が形成され、案内リブ59を案内溝57に案内して収納部56に反転可能に装着されるようになっている。60は前記基台58一側面に形成された略円柱状の係合突部で、複数個形成されており、後述する拭き部材63の支持部61に形成した係止部62が着脱自在に係合するようになっている。

【００５５】61は合成樹脂製の支持部で、一側面に前記基台58の係合突部60に係脱自在に係合する係止部62が形成され、支持部61は係止部62の係合突部60への係合により基台58に対して少許揺動可能に装着されている。前記支持部61は基台58に対して少許揺動可能に装着することにより、後述する拭き部材63を床面の凹凸に沿わせることができる。前記支持部58、弾性体31及び布状体32により拭き部材63を構成している。

【００５６】本第３の実施の形態では、支持体58を収納部56に反転して装着することにより拭き部材63を露出させてフローリング等を拭き掃除する状態及び拭き部材63を収納して絨毯等を掃除する状態に使い分けるものである。その他の作用は第１の実施の形態と同様であるので、説明を省略する。

【００５７】本発明の第５の実施の形態を図２４乃至図２５に基づいて詳述する。尚、第１の実施の形態と同一部品は同一符号を付して説明を省略する。

【００５８】64は低摩擦抵抗性を有する合成樹脂製の基台で、一端側に形成した枢支軸65を吸込具本体１底面に形成された収納部66に回動自在に軸支され、一側面に拭き部材33が着脱自在に装着されるようになっている。前記基台64は、拭き部材33が吸込具本体１底面側を向く位置と拭き部材33が収納部66に収納される位置との間を回動し、収納部66両側壁との間に形成した図示しない位置決め手段により、図２５に示す拭き部材33が吸込具本体１底面側を向く位置と、図２４に示す拭き部材33が収納部66に収納される位置とに位置決めされるようになっている。

【００５９】前記拭き部材33は、図２５に示すごとく、拭き部材33が吸込具本体１底面側に向く位置に回動させた状態では、回転ブラシ９の下方に位置し、拭き部材33下面が前後車輪34、35の最下位置より下方に位置すると共に、図２４に示すごとく、拭き部材33が収納部66に収納される位置に回動させた状態では、基台64の一側面が吸込具本体１底面より上方に位置するようになっている。

【００６０】本第５の実施の形態も第１の実施の形態と同様の作用を奏するものであり、説明を省略する。

【００６１】

【発明の効果】本発明の請求項１の構成によれば、掃除機に対する過負荷及び被掃除面への傷付けを防止して、被掃除面の塵埃の吸塵と同時に拭き掃除を行うことができ、掃除効率を向上することができると共に、絨毯等の掃除時に布状体に付着した汚れを絨毯等に付着させる不都合を解消することができる。また、布状体が装着された基台の枢支軸を基台の偏心した位置に配設し、その短手側が収納部内を回転するので、収納部の高さを低く形成することができ、吸込路が狭隘化するのを防止することができ、吸込効率が低下するのを抑制することができる等の効果を奏する。

【００６２】本発明の請求項２の構成によれば、掃除機に対する過負荷及び被掃除面への傷付けを防止して、被掃除面の塵埃の吸塵と同時に拭き掃除を行うことができ、掃除効率を向上することができると共に、絨毯等の掃除時に布状体に付着した汚れを絨毯等に付着させる不都合を解消することができる。また、吸込具本体は押し動作時に被掃除面に強く押しつけられるため、主に押し動作時に拭き掃除が行われ、基台は押し動作時における回動を阻止手段により阻止されるので、基台が不用意に回動して基台によって被掃除面を傷つけることがない等の効果を奏する。

【００６３】本発明の請求項３の構成によれば、掃除機に対する過負荷及び被掃除面への傷付けを防止して、被掃除面の塵埃の吸塵と同時に拭き掃除を行うことができ、掃除効率を向上することができると共に、絨毯等の

不都合を解消することができる。また、拭き部材を基台から取り外して拭き部材を交換あるいは洗浄することができ、高い掃除能力を長期にわたり維持することができる。さらに、拭き部材が装着された基台の枢支軸を基台の偏心した位置に配設し、その短手側が収納部内を回転するので、収納部の高さを低く形成することができ、吸込路が狭隘化するのを防止することができ、吸込効率が低下するのを抑制することができる等の効果を奏する。

【００６４】本発明の請求項４の構成によれば、掃除機に対する過負荷及び被掃除面への傷付けを防止して、被掃除面の塵埃の吸塵と同時に拭き掃除を行うことができ、掃除効率を向上することができると共に、絨毯等の掃除時に拭き部材に付着した汚れを絨毯等に付着させる不都合を解消することができる。また、拭き部材を基台から取り外して拭き部材を交換あるいは洗浄することができ、高い掃除能力を長期にわたり維持することができる。さらに、吸込具本体は押し動作時に被掃除面に強く押しつけられるため、主に押し動作時に拭き掃除が行われ、基台は押し動作時における回動を阻止手段により阻止されるので、基台が不用意に回動して基台によって被掃除面を傷つけることがない等の効果を奏する。

【００６５】本発明の請求項５の構成によれば、掃除機に対する過負荷及び被掃除面への傷付けを防止して、被掃除面の塵埃の吸塵と同時に拭き掃除を行うことができ、掃除効率を向上することができると共に、絨毯等の掃除時に拭き部材に付着した汚れを絨毯等に付着させる不都合を解消することができる。また、拭き部材を基台の枢支軸に着脱する構成とすることにより着脱構成を簡素化することができると共に、拭き部材を基台から取り外して交換あるいは洗浄を行うことができ、高い掃除能力を長期にわたり維持することができる等の効果を奏する。

【図面の簡単な説明】

【図１】本発明の第１の実施の形態を示す拭き部材を露出させた状態の断面図である。

【図２】同拭き部材を収納した状態の断面図である。

【図３】同拭き部材を露出させた状態を示す底面図である。

【図４】同拭き部材を収納した状態を示す底面図である。

【図５】同拭き部材を露出させた状態を示す他の方向から見た断面図である。

【図６】同拭き部材を収納した状態を示す他の方向から見た断面図である。

【図７】同要部拡大断面図である。

【図８】同基台の着脱操作を説明する断面図である。

【図９】同基台の着脱操作を説明する底面図である。

【図１０】同側面図である。

【図１１】同他の実施の形態を示す断面図である。

【図１２】同底面図である。

【図１３】同他の方向から見た断面図である。

【図１４】同他の実施の形態を示す断面図である。

【図１５】同第２の実施の形態を示す拭き部材の着脱操作を説明する断面図である。

【図１６】同拭き部材を装着した状態を示す断面図である。

【図１７】同第３の実施の形態を示す拭き部材を露出した状態の断面図である。

【図１８】同拭き部材を収納した状態の断面図である。

【図１９】同拭き部材を取り外した状態を示す断面図である。

【図２０】同他の方向から見た断面図である。

【図２１】同第４の実施の形態を示す拭き部材を露出した状態の断面図である。

【図２２】同拭き部材を収納した状態の断面図である。

【図２３】同底面図である。

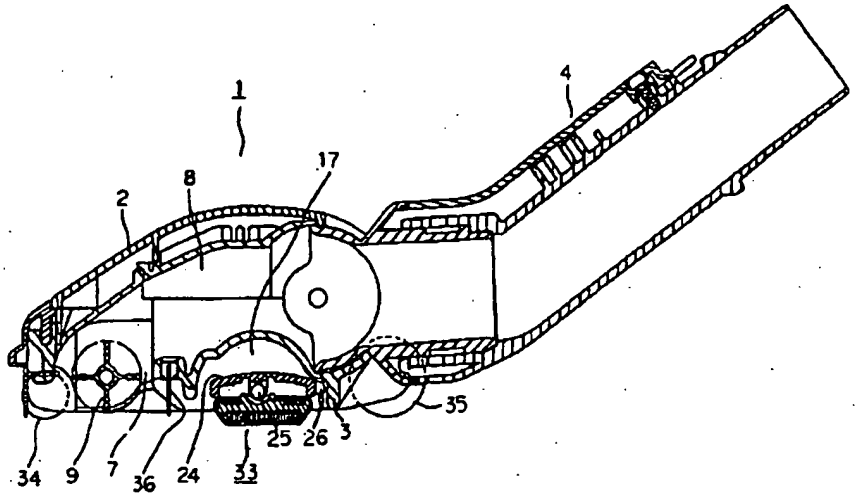
【図２４】同第５の実施の形態を示す拭き部材を収納した状態の断面図である。

【図２５】同拭き部材を露出した状態の断面図である。

【符号の説明】

1	吸込具本体
7	吸気口
17	収納部
24	基台
25	枢支軸
26	突部
27	支持体
33	拭き部材

【図1】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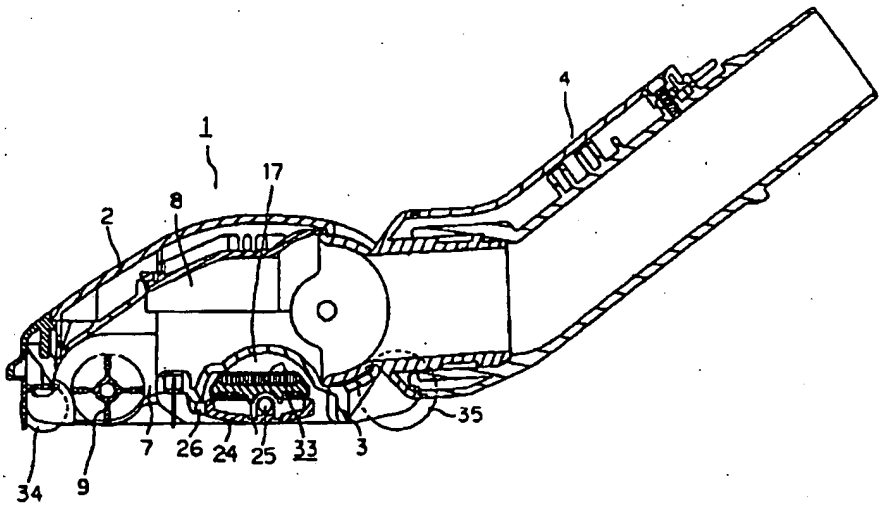
【図2】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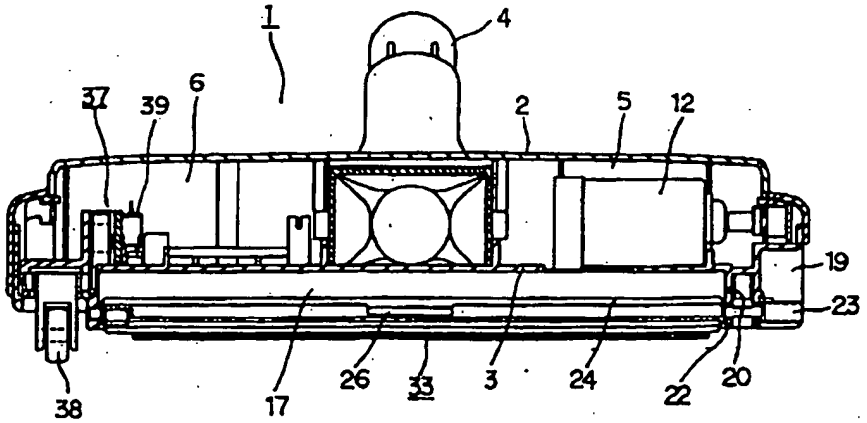
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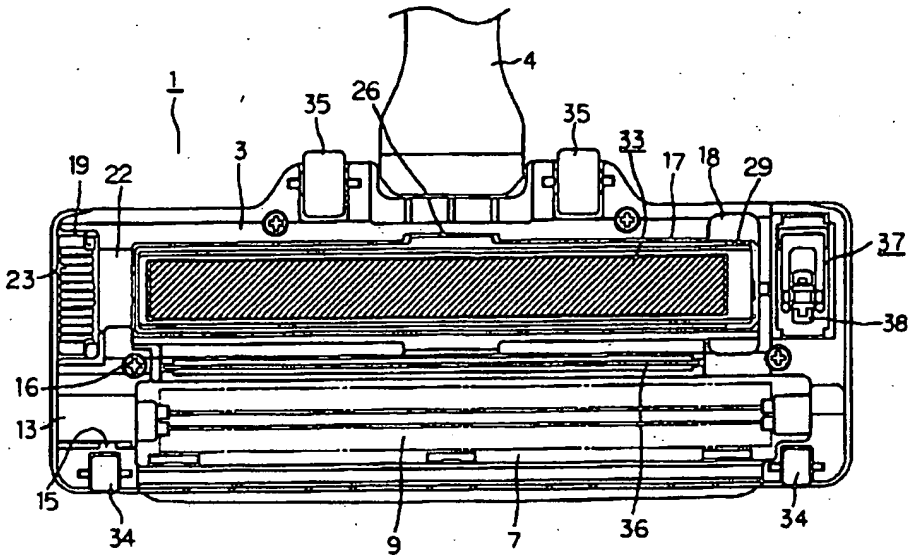
【図3】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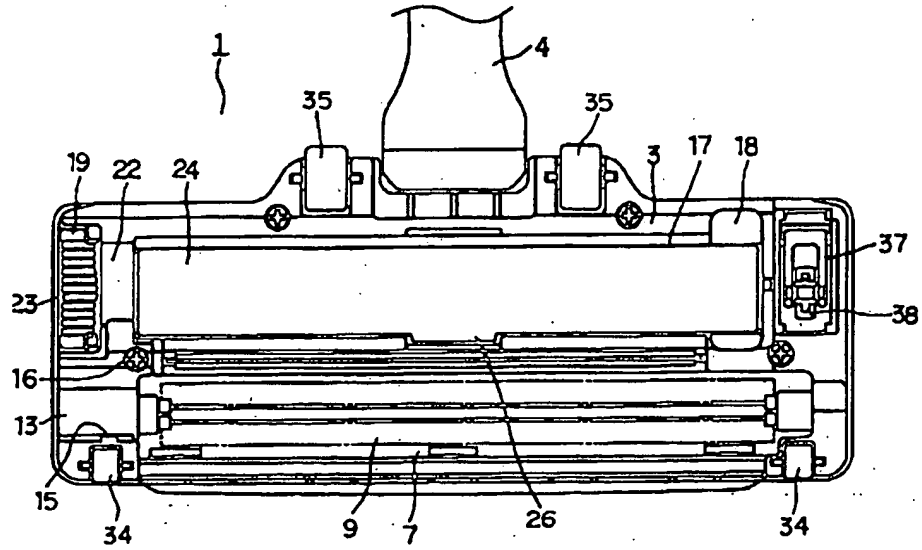
【図4】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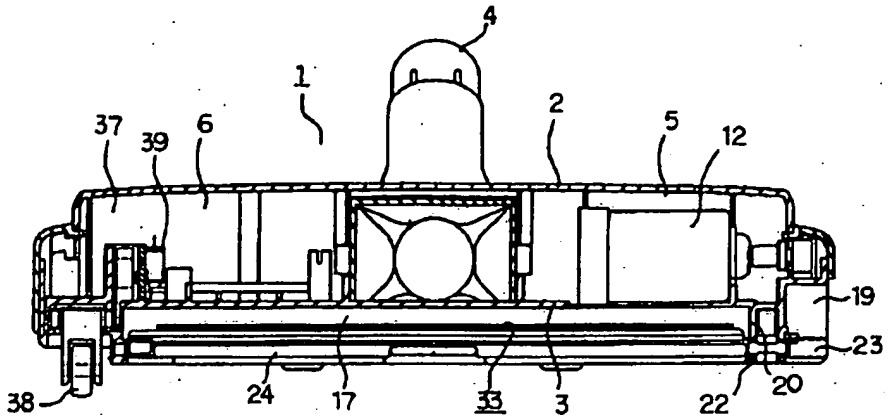
【図6】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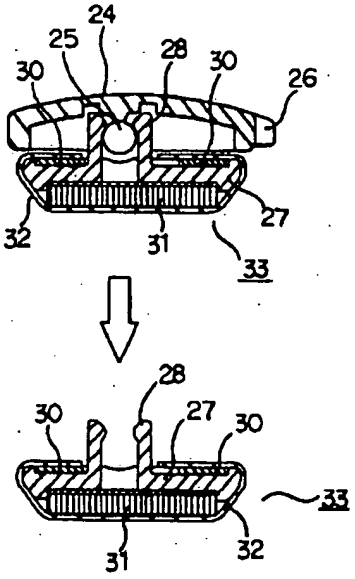
【図7】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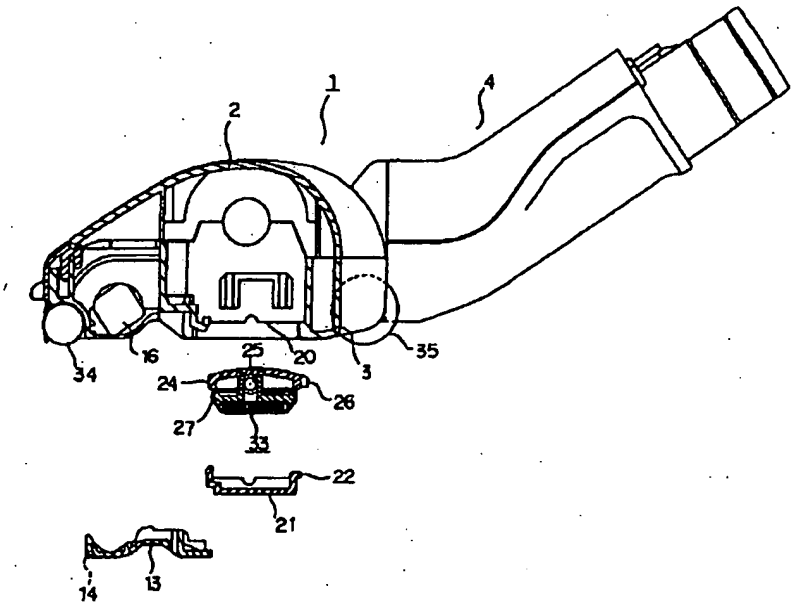
【図8】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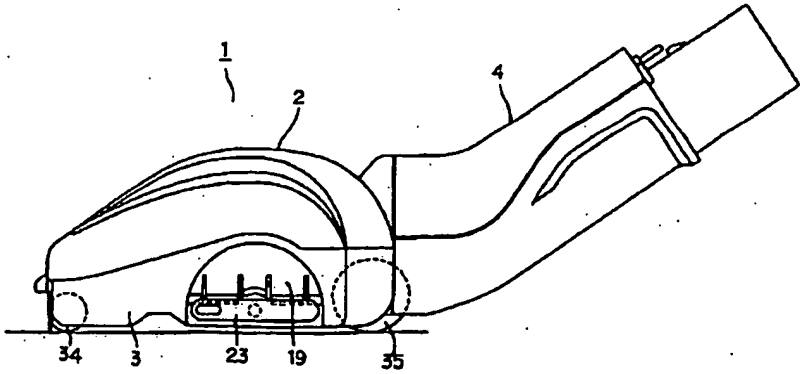
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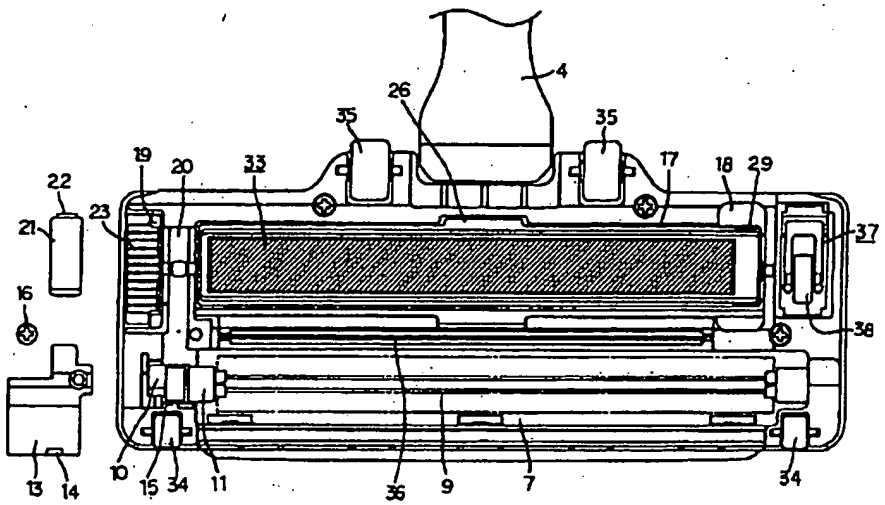
【図9】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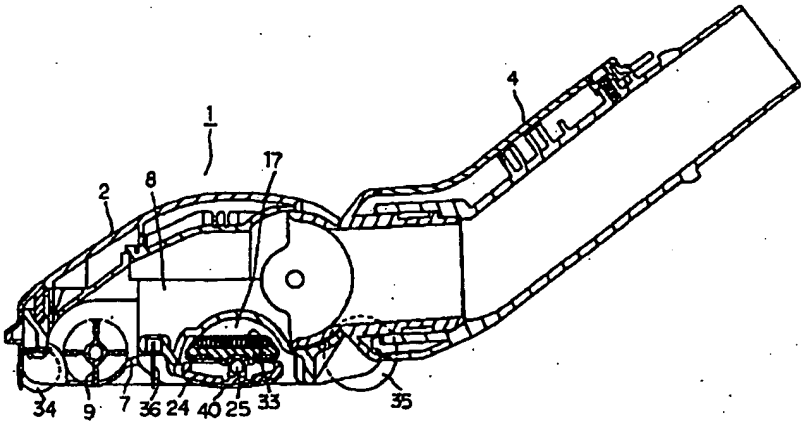
【図11】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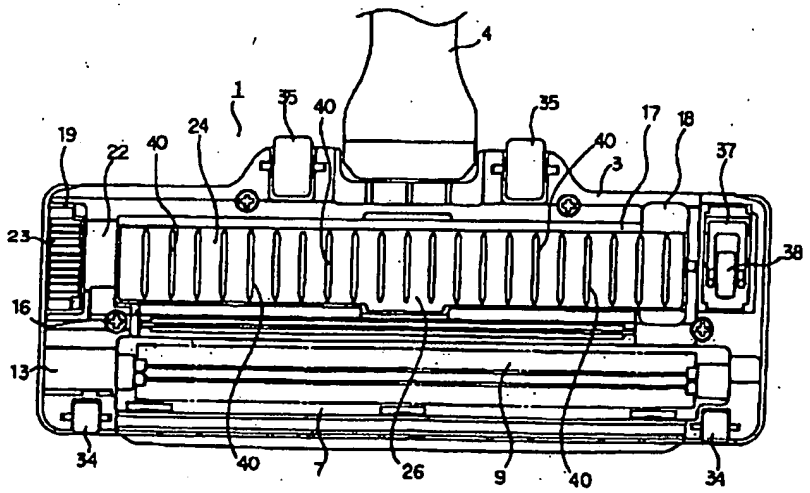
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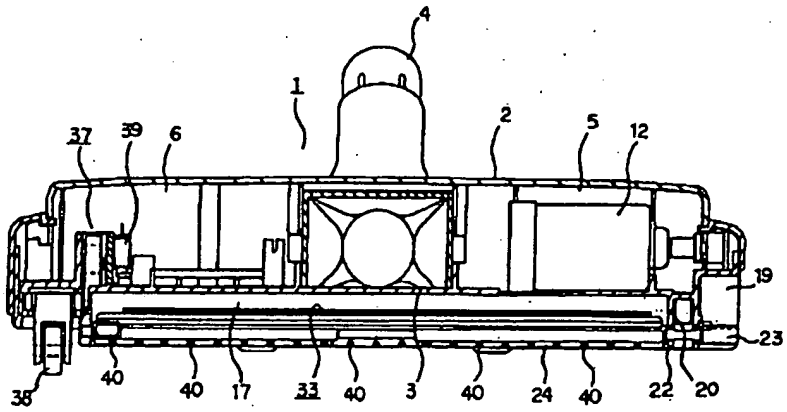
【図13】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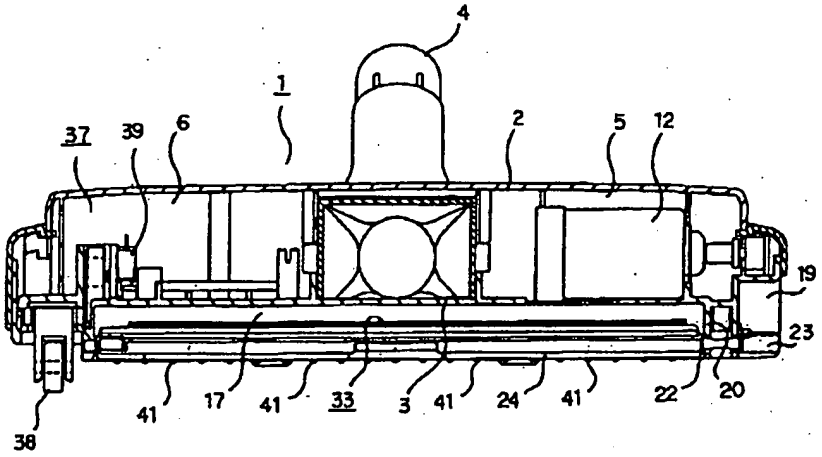
【図14】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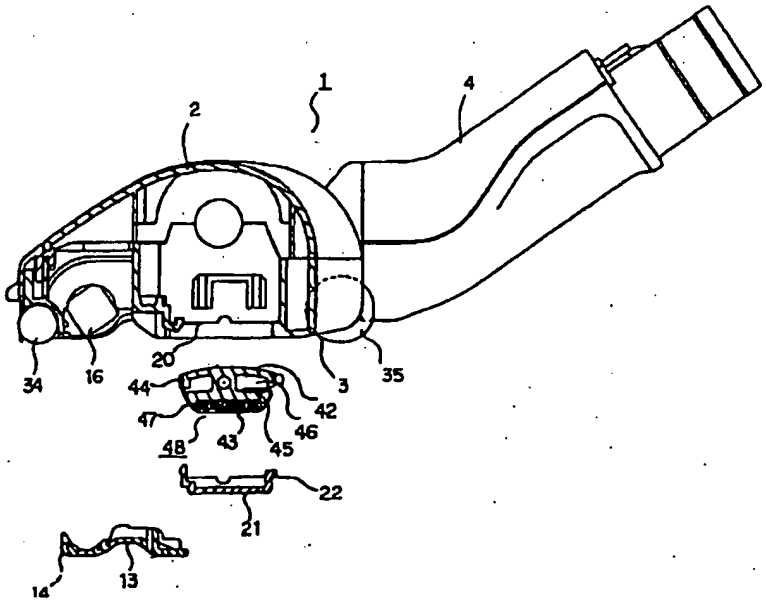
【図15】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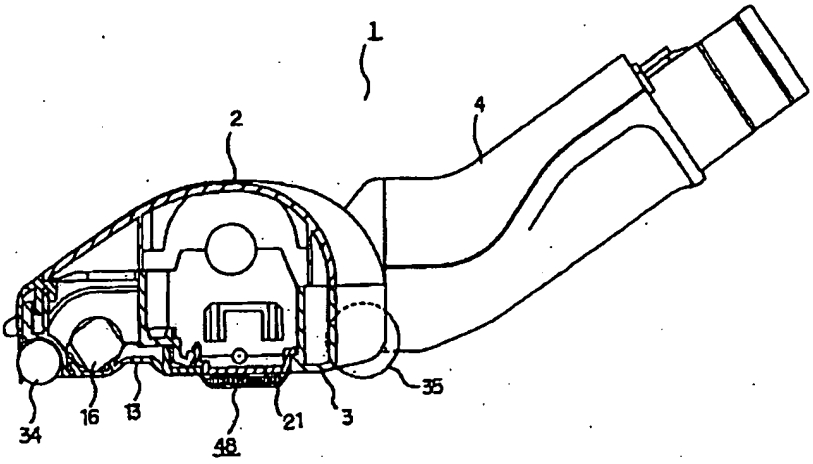
【図16】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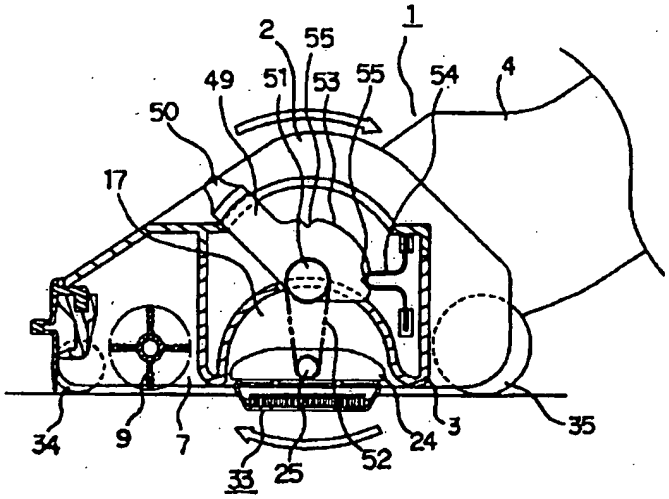
【図17】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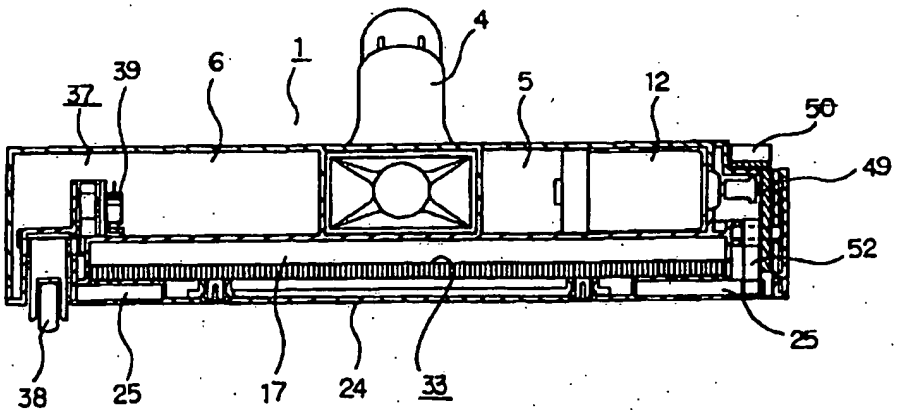
【図20】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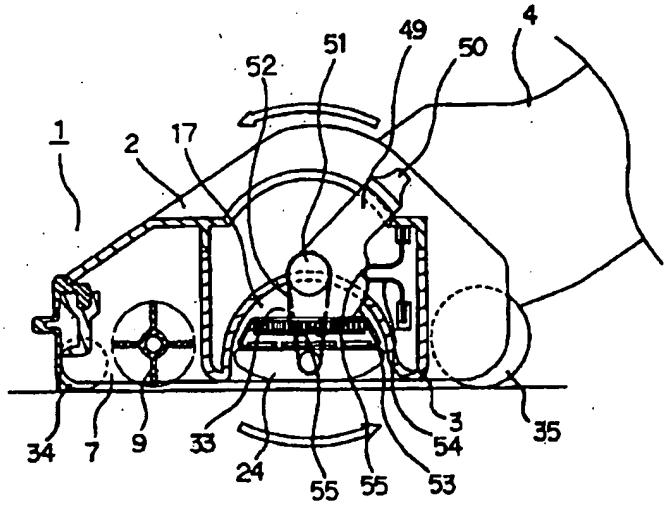
【図18】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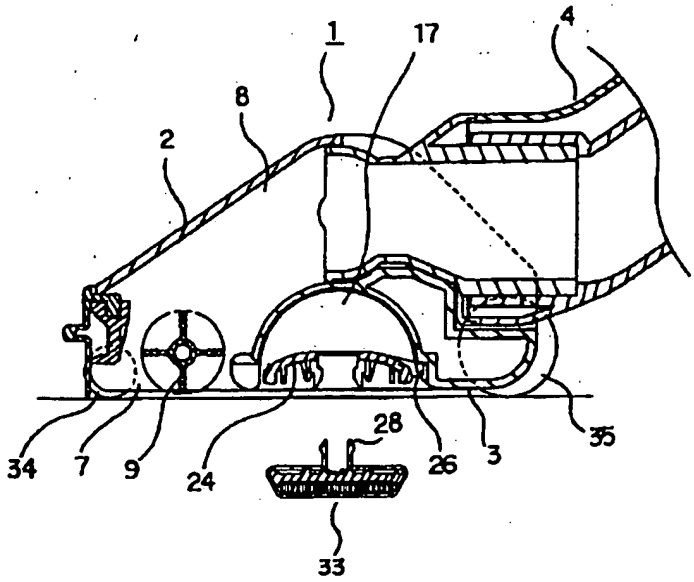
【図19】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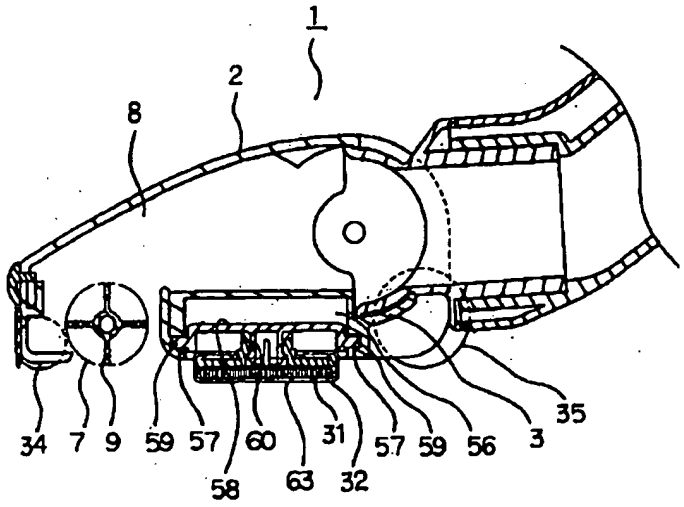
【図21】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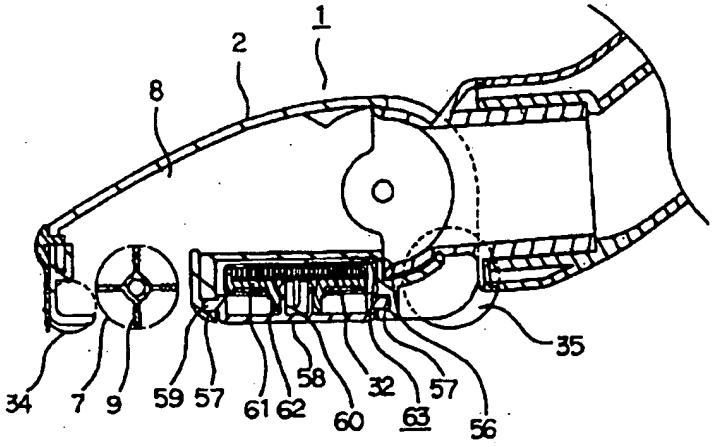
【図22】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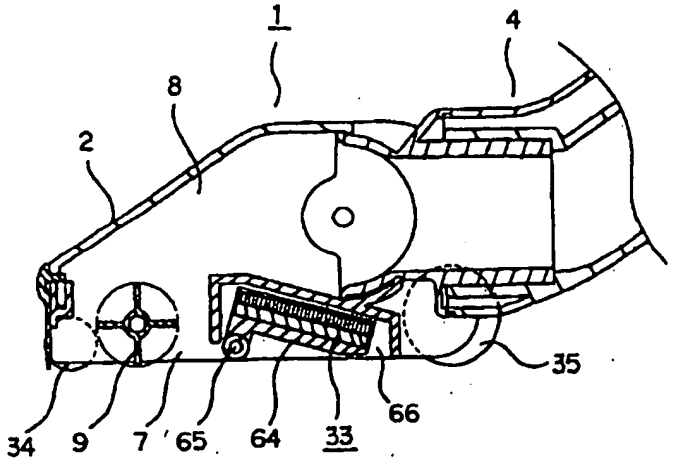
【図24】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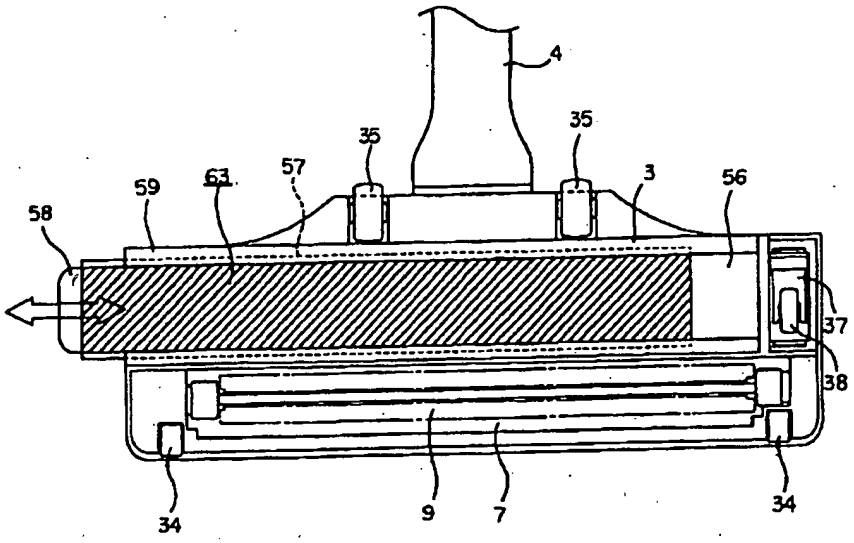
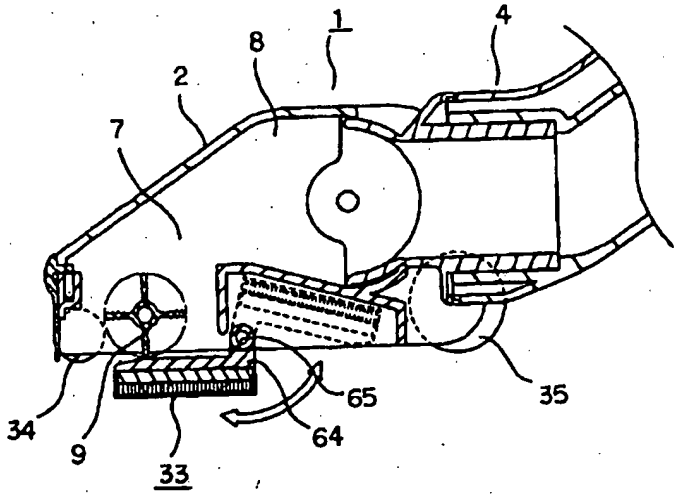
【図23】



【図25】



フロントページの続き

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11/ 26			11/ 26	
// A 47L 11/ 28			11/ 28	

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54) Title of the Invention: **SUCTION TOOL FOR ELECTRIC VACUUM CLEANER**

(21)Application number : Patent Application H 08- 179325

(22) Date of filing the application: July 9, 1996

(71) Patent Applicant : 000001889

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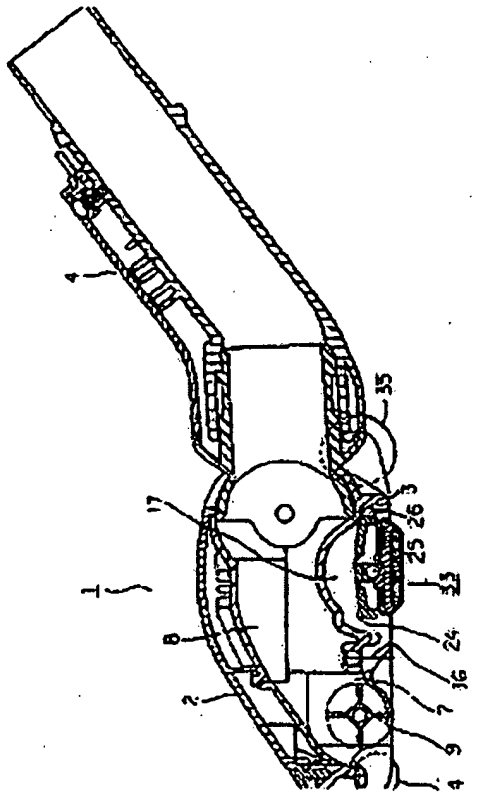
Continued on the last page

(54) Title of the Invention: SUCTION TOOL FOR ELECTRIC VACUUM CLEANER

(57) Abstract:

PROBLEM TO BE SOLVED: To make possible a simultaneous operation of sucking the dust and dirt and wiping of the surface to be cleaned without imposing an over-load on a motor-driven blower or contaminating the surface to be cleaned.

SOLUTION: An stowage section 17 is formed in a position adjacent to a suction hole 7 found in the bottom surface of the body of a suction tool 1, and a base 24 is furnished rotatably, whose one side is fitted with a wiping material 33 capable of collecting the dust and rubbish and the other side with no wiping member being attached which are the selectively exposed at the bottom surface of the suction tool body 1, and a pivot shaft 25 is installed on the base 24 in an eccentric position about the width in the longitudinal (horizontal), and its shorter side is rotated within the stowage section 17.



[Claims made by the Patent]

Translator's Note: The claims have not been translated as per instructions from Mr. Hanley.

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention is one that connects with a vacuum cleaner and pertains to improvements in the suction tool device which implements the sweeping and cleaning up of an area by sucking up the dust and dirt etc.
[0002]
[Description of the Prior Art] Conventionally, we had dust cloths or mops that were fitted to the bottom surface of these suction devices which were then used as suction tools for floor cleaning. For example, well known devices have been already mentioned in patent publications JP, 62 - 184846, U (A47L 9/02) and JP, 50 -38223, Y (92 (3) D101.1), etc.
[0003] However, since these suction devices cover the entire bottom surface of the body of the suction device by virtue of being equipped with a dust cloth or a mop etc, we find that the dust adheres to the dust cloth or the mop, and is not collected into the vacuum cleaner and with the cleaning operation, the dust particles and dirt now moves though the surface to be cleaned and in fact could wind up damaging or contaminating the surface to be cleaned. Moreover, there was increased suction resistance caused by the presence of the dust cloth and the mop and since the volume of air in the vacuum cleaner fell, the force and adsorption capacity of dust declined, thereby causing a defect that is very similar to imposing an over load on a motor driven blower.
[0004] Then, the applicant for this patent invention installed suction inlets positioned one next to the other in the base of suction device both in front and at the back (horizontal direction), and proposed a suction device that had a wiping material attached to the suction inlet in the rear as in Japanese Patent Application No. H 07-104429. In this suction device, the wiping material was attached to the rear suction inlet such that it could be freely moved in the top and bottom directions and when cleaning flooring etc, the wiping material would be made to project out from the suction inlet and, when collecting the dust from the front and back suction inlets, not only would the dust be adsorbed via the wiping material, but further an action to clean the flooring would also be simultaneously performed. Further, in the case of cleaning a tatami, a carpet, etc. the wiping material is located within the rear suction inlet and dust is adsorbed from the front suction inlet while making sure that the wiping material does not come into contact with the surface that is to be cleaned.
[0005] However, in this configuration, since the wiping material has been positioned in a manner whereby it can move only in upward and downward direction, when cleaning a carpet etc, should the wiping materials be positioned only in the rear suction inlet, the surface to be cleaned will be in contact with the wiping material and there was always a concern associated with dirtying or contaminating the surface to be cleaned caused by dirt or dust particles getting attached to the wiping material or any other unnecessary soiling of the wiping material.
[0006]
[Problem(s) to be Solved by the Invention] This invention aims to solve the above mentioned problem and proposes to offer a suction device for vacuum cleaners which can perform suction of dust and wiping of the surface to be cleaned simultaneously, by taking into consideration the existing defects while taking care to ensure that there is no application of an overload to the motor driven blower or the soiling of the surface to be cleaned.
[0007]
[Means for Solving the Problem] In the first means of this invention, we have a suction tool that has formed a suction inlet in the bottom surface, wherein we have an accumulation / storage part (this is also referred to as stowage) that is formed in a location contiguous to the said suction device body's suction inlet and further is supported in a manner whereby it can be freely rotated through a pivotable support shaft provided in the storage section. It is further equipped with blanket like object on one side which is capable of sucking up the dust and has another side which does not contain a blanket like structure and is also provided with a base that selectively/ alternately exposes these side to the bottom portion of the suction device. Further it is set up in a position that is eccentric with respect to the cross directional width of the pedestal and the device is characterized by the using the shorter hand to rotate the inside of the storage section/ stowage.
[0008] In the second means of this invention, wherein we have a suction tool that has formed a suction inlet in the bottom surface, we have stowage part that is formed in a location contiguous to the said suction device body's suction inlet and further is supported in manner whereby it can be freely rotated through a pivotable support shaft provided in the storage section. It is further equipped with a blanket like object on one side which is capable to sucking up the dust and has another side face which does not contain a blanket like structure and is also provided with a base that selectively/ alternately exposes these side to the bottom portion of the suction device, when the said blanket-like object is exposed to the base side of the suction

device's body, it is characterized by establishing an means of inhibition that prevent the pedestal from moving or rotating towards the back side of the suction device's body brought on by friction with the surface to be cleaned when the suction body is actually pushed.

[0009] In the third means of this invention, we have an accumulation / storage part that is formed in a location that is contiguous to the said suction device body's suction inlet and further is supported in manner whereby it can be freely rotated through a pivotable support shaft provided in the stowage section. It is further equipped with a blanket like object on one side which is capable of sucking up the dust and has another side face which does not contain a blanket like structure and is also provided with a base that selectively/ alternately exposes these side to the bottom portion of the suction device and the characteristic feature here is that the said pivotable support shaft is set up in an eccentric position with respect to the cross directional width of the base and the shorter hand rotates the inner storage section.

[0010] In the fourth means of this invention, wherein we have a suction tool that has formed a suction inlet in the bottom surface, we have a stowage / storage part that is formed in a location that is contiguous to the said suction device body's suction inlet and further is supported in manner whereby it can be freely rotated through a pivotable support shaft provided in the storage section. It is further equipped with a blanket like object on one side which is capable to sucking up the dust and has another side face which does not contain a blanket like structure and is also provided with a base that selectively/ alternately exposes this side to the bottom portion of the suction device, and when the said blanket-like object is exposed to the base side of the suction device's body, it is characterized by establishing an means of inhibition that prevents the pedestal from moving or rotating towards the back side of the suction device's body brought on by friction with the surface to be cleaned when the suction body is actually pushed.

[0011] In the fourth means of this invention, wherein we have a suction tool that has formed a suction inlet in the bottom surface, we have a stowage part that is formed in a location contiguous to the said suction device body's suction inlet and further is supported in manner whereby it can be freely rotated through a pivotable support shaft provided in the storage section. It is further equipped with a blanket like object on one side which is capable to sucking up the dust and has another side face which does not contain a blanket like structure and is also provided with a base that selectively/ alternately exposes this side to the bottom portion of the suction device when the said blanket-like object is exposed to the base side of the suction device's body, and the said wiping member is attached such that it can be freely attached or detached from the pivotable support shaft.

[0012]

[Embodiment of the Invention] The first embodiment / working example of this invention has been explained below based on based on Drawing 1 thru/ or Drawing 10.

[0013] 1 is the main body of the suction device, and is constituted from the upper case 2 and the lower case 3 and in the middle of the anterior section, is supported by a connection pipe 4 which is connected to the vacuum cleaner which has not been shown in the drawing and, on both sides of this connection pipe 4, a motor storage room 5 and an electronic-auto parts storage room 6 has been formed. 7 is the inlet formed in the front of the lower surface of the said suction tool 1 which is joined to the connection pipe 4 through the inlet passage 8 formed between the upper case 2 and the bottom case 3.

[0014] 9 is the rotation brush which is made to face the said inlet port 7 and is supported by a bearing 10 such that it can be freely moved and rotated in the suction device body 1 and has been equipped with a pulley 11 on one side. 12 is the motor set up in the motor storage room 5 of the body of the suction device 1's aforementioned posterior portion, which constructs the belt (which is not illustrated) between the pulley 11 and the said rotation brush 9, and carries out the rotation drive of the rotation brush 9.

[0015] 13 is a fixed part that wraps the pulley 11 of the said rotation brush 9 and the pulley bearing 10 that is located close to the pulley 11 from the bottom surface of the suction device's main body 10, and in the engagement slot 14 which has been constructed on one end, not only is the engagement projection 15 which is formed in the suction device engaged, but further by fixing the other end to the suction device 's main body 1 using a screw, this fixed material is mounted in the suction device 1 such that it can be freely attached and detached.

[0016] 17 is the stowage part which extends from the lower surface of the suction device 1 upwards to the center of the bottom surface of the said suction tool's main body 1 and the base 24 which will be described later, is supported such that it can be freely rotated. 18 which is set up in the lower surface of the said suction tool's main body 1 is a crevice that is joined to the said housing/ stowage part 17 and is formed in a manner which allows for the wiping material 33 to be removed from the base 24 by a mere push from a finger.

[0017] 19 is the hollow section that is formed in the location contiguous to the stowage 17 by the side of the aforementioned body of the suction device 1 , and the stowage 17 and the hollow 19 are divided by a the partition wall 20. 21 is the piece of support with which the body of suction device 1's base side of the said partition wall 20 is equipped, and is supported such that it can freely rotate the pivotable support shaft 25 of the pedestal 24 that is described later in between the partition wall 20 and the piece of support 21, enabling free rotation. The said support piece 21 engages the engagement pawl 22 which has been formed on one side, to the body of the suction device 1 and the other sides, by virtue of being pushed from the bottom surface of the said suction device 1 's main body by the said fixed material 13 and is now mounted in the main body of the suction tool such that they can be freely detached. 23 is an operating object which is fixed to the pivotable support shaft 25 of the base 24 installed in said hollow 19, and rotates the base 24 by carrying out rotation actuation of this operating object 23.

[0018] 24 is the base pedestal made of synthetic resin which has a low frictional resistance nature and has been set up in the said stowage 17, and is mounted in the pivotable support shaft 25 which is supported on both sides of the said stowage 17 and is further freely rotatable in the stowage 17. The said base 24 is formed in a plate like form and apart from the wiping material 33 which is described later being mounted on one side in a freely detachable fashion, the other side which is facing the first side is formed in the shape of a circular arc so that it is easy to slide and improves the movement when the other sides of the base 24 are exposed to the lower surface of the suction tool 1. The said pivotable shaft is mounted in a location that is eccentric to the base 24 and a projected part 26 is formed on one side of the base 24 for the purpose of stipulating the rotations such that the shorter arm rotates the interior of the storage part 24. The said projected part 26 as has been shown in Drawing 1 and Drawing 3, is formed in a position which controls the rotation of the base 24 when pushing and operating the suction tool's body 1 when the wiping material 33 faces the lower surface of the suction tool 1 as will be described later and in other words, is positioned in the anterior part of the suction tool's body 1 in both Drawing 1 and Drawing 3.

[0019] 27 is a support material made of synthetic resin, and stops the stop pawl 28 which was formed in the upper surface on the said pivotable support shaft 25 and is further mounted on the base 24 such that it cane be freely detached. 29 is a hand rest section which is formed on the part located in the hollow 18 of the said support body 27, where a finger can be applied to this hand rest portion 29 to remove the support 24 from the

base 24. 30 is a stop member that is stuck on the anterior part and the posterior part of said support material 27's top surface, and has many fibrous objects made of synthetic resin which have the elasticity and whose tips are shaped in the form of a hook.
[0020] 31 is the elastic body made from materials that are elastic and are pasted on the lower surface of the base 24 and in this embodiment, uses materials that which are very fibrous and are like transplanted hair that are extremely flexible and resilient, or in other words, makes use of so-called piloerection objects.
As for said elastic body 31, it may be desirable to use materials with comparatively large resiliency so that the needs of a rough surface of the cleaning area may be met, and a sponge is sufficient in addition to the above-mentioned ingredient.
[0021] 32 is a blanket-like object and it is in a condition wherein it covers the said elastic body 31 and both the ends are hooked on very fibrous objects of the stop member 30 and is stopped and further, when the base 24 is equipped with the support material 27, both ends of the blanket shaped structure 32 are positioned such that they are sandwiched in between the base 24 and the support object 27. The said blanket like object 32 is formed from objects that are capable of picking up dust and then retaining the dust and dirt particles and more specifically, are formed from non-woven fabric, cloth, paper, etc. In this embodiment of the invention, it so formed from non woven fabric which consists of microfilaments, such as polyester and polypropylene, and specifically, said blanket-like object 32 performs static electricity processing to the microfilament, in order to improve dust retention even further.
[0022] The wiping material 33 is constituted from the said support material 27, an elastic body 31, and the blanket-like object 32.
[0023] 34 is the front wheel which is supported such that it is freely rotatable in the anterior of the bottom surface of the said suction tool 1 while 35 is the rear wheel which is supported such that it is freely rotatable in the posterior of the bottom surface of the said suction tool 1 and, when the base 24 is rotated such that the wiping material 33 is positioned in the side of the lower surface of the suction device 1, the lowest position of both these wheels 34 and 35 are located such that they are above the lower surface of the wiping material 33 and moreover, when the base 24 is positioned on the side of the suction device body 1 such that the base is made rotatable, the lowest position of both wheels 34 and 35 are located such that they are beneath the lower surface of the base 24.
[0024] 36 is a flap which is set up in between the bottom surface of the said suction device 1's main body and the inlet passage 7 and is made from materials possessing elasticity such as rubber etc. When this flap 36 is in a state that rotates the base 24 and, the wiping material 33 is positioned in the bottom surface of the suction tool body 1, the bottom most location of the flap 36 is positioned above the lower surface of the wiping material 33 and the wiping materials 33 is housed in the stowage 17, and when the base 24 is positioned in the bottom surface of the suction tool's main body 1 such that it can be made to rotate, the lowermost position of the flap 36 should be set up beneath the bottom surface of the base 24.
[0025] 37 is the safety switch contained in the substrate storage chamber 6 of the body of suction device 1's aforementioned posterior part, and projects the rotation roller 38 which is the detecting element from a location which is contiguous to the stowage 17 and that extends to the bottom surface of the body of the suction device 1. When the said safety switch 37 and the main body of the suction switch 1 come into contact with the surface to be cleaned, the rotating roller 38 is pushed by the surface to the cleaned and moves in the direction of the suction tool 1's main body and after operating the switch 39 the motor 12 for rotation brush 9 drive can be actuated as well. Further, when the body 1 of an suction device is lifted up from the surface to be cleaned, the rotating roller 38 moves into the direction that projects from the suction device main body 1 and is in a state wherein the motor 12 can no longer be operated once the switch 39 is activated.
[0026] In addition, the lower part of the elastic body 31 is covered with the blanket-like object 32, and it is stopped/ inhibited by many of the fibrous objects of the stop member 30 when both ends of the blanket like materials were set up in the support materials 27. In such a condition, the stop pawl 28 of the support material 27 is stopped in the pivotable support shaft 25 of the base 24 and the wiping material 33 is mounted/ attached on to the base 24.
[0027] When cleaning surfaces that require wiping such as in the case of flooring etc, as has been shown in Drawing 1, the wiping material 33 may be located in a body of suction device 1's bottom side, and the base 24 is then rotated and the vacuum cleaner is operated and the suction device main body 1 is then moved. In the case when the body of the suction device 1 is strongly pushed to the surface of the field to be cleaned and conversely when moved to the back, one gets the feeling that the body of the suction device 1 is going to float. The wiping operation is mainly performed when the body of the suction device 1 is moved forward and in such a state, a relatively large amount of dust or rubbish is sucked up from the inlet 7 and minute dust particles are now captured by the blanket like object 32 of the wiping material 33 and any oily dust particles etc which are attached to the surface to be cleaned will be caught by the wiping material 33. Since the blanket-like object 32 has had electrostatic processing performed for its fiber, its grabbing nature of the dust is further improved.
[0028] Since the wiping material 33 is set up in a position that is adjoining the inlet 7, and further since the inlet 7 is not covered, a sufficient amount of air for cooling of the electric blower of the body of a cleaner can be absorbed, and it can prevent the possibility of the electric blower serving as an overload.
[0029] Since both the ends of the blanket-like object 32 are sandwiched in between the base 24 and the support material 27 while they are stopped by the stop member 30, they can prevent the detachment of the blanket like object 32 from the support material 27 by the pushing action which accompanies cleaning.
[0030] This wiping material 33 is positioned in the bottom surface of the suction tool main body 1, and the front wheel 34 and the rear wheel 35 both get into a floating state and even if sand and other dirt falls, the sand etc. is pushed on both the wheels 34 and 35, and while it does not damage the surface to be cleaned, adhesion to the wiping material 33 is prevented on account of the flap 36 that is set up in the anterior of the wiping material 33 and the dust and sand is absorbed into the vacuum cleaner through the inlet 7.
[0031] Since the base 24 regulates rotation of the base 24 when it carries out the push actuation of the body 1 of an suction device through the projected part 26, the base 24 is not rotated when pushing the suction device main body 1 while adding a special force at the time of wiping and the base 24 does not damage the surface of the area to be cleaned because of any unnecessary movement or any careless rotations.
[0032] When the blanket-like object 32 becomes dirty, the wiping material 33 is positioned in the bottom surface of the suction device's main body 1 and when a finger is pushed through the hollow 18, the hand rest 29 of the support material 27 is grasped, and by lengthening out this support material 27, the engagement of the stop pawl 28 and the pivotable support shaft 25 is removed, and it is exchanged with a new blanket-like object 32.

[0033] In the rare event when there is no blanket like object 32 that can be replaced, the wiping material 33 is mounted or attached to the base 24 when the blanket like object has been detached and the wiping operation is carried out by positioning the wiping material 33 on the lower surface of the suction tool's main body part 1. When the wiping material 33 has removed the blanket like object 32, the elastic material 31 comes into contact with the surface to be cleaned and further since the elastic object 31 makes use of piloerected objects, it becomes possible to wipe the surface to be cleaned using the elastic material 31 and the surface to be cleaned can be swept and cleaned with an elastic body 31. Since the wiping material 32 is set up in a freely rotatable way on the base 24, after cleaning the surface to be cleaned using the elastic body 31, the wiping material 33 is detached from the base 24 and it is then possible to wash up this elastic body 31.

[0034] Moreover, in the rare case of the base 24 getting damaged and further when replacing the base 24, the screw 16 which fixes down the fixed material 13 is removed, and the fixed material 13 is removed from the body of the suction device 1. Where the fixed material 13 is removed, the piece of support 21 is removed from the body of the suction device 1, the pivotable support shaft 25 is removed from the side supported between the piece of support 21 and the partition wall 20, and the base 24 is removed from the body of the suction device 1. Further, the fixed material 13 is mounted on the suction tool's main body 1 and the fixed material 13 is then fitted using a screw 16. When the above described fixed material 13 is detached, the rotating brush 9 is detached from the main body of the suction device 1 and it becomes possible to removed the waste threads which got twisted around the rotation brush 9.

[0035] In the case of cleaning areas such as a tatami and a carpet, the base 24 is rotated by operating a control unit 23, and the wiping material 33 is then housed into the stowage 17 while the base 24 is then positioned in the lower surface of the suction device main body 1. When the wiping material 33 is nicely housed, both the front wheel 34 and the rear wheel 35 come into contact with the surface to be cleaned and in this manner the operability of then body of the suction device 1 greatly improves. Further, since the base 24 which is suitable for the body of suction device 1's base side is formed in the shape of a circle arc which is at its lowest in the central portion, the contact resistance with the surface to be cleaned is lowered and further since the base 24 has been formed using a synthetic resin that has a low level of frictional resistance, it is possible to substantially improve the operability and movement when cleaning a carpet etc..

[0036] When cleaning surfaces covered with tatami or carpets and other similar surfaces that do not require a wiping material 33, the wiping material 33 will be located in the stowage 17 and the blanket like object 32 of the wiping material 33 will come into contact with the surface to be cleaned, not only will there be no unnecessary soiling of the surface area but further the dirt from the wiping material 33 will not adhere to the carpet etc and make the carpet etc. dirty.

[0037] Since the base 24 mounted the pivotal shaft 25 in an eccentric position, the shorter arm is constituted such that it rotates the interior of the stowage 17 and it is now possible to reduce the height of the stowage 17 and it is thereby possible to prevent the inlet passage 8 from becoming narrow.

[0038] In the embodiment of this invention, since the base 24 has been formed using a synthetic resin which has a low frictional resistance nature, it would also be acceptable to paste low frictional resistance materials in the side that is opposite to the side that where the wiping material 33 of the base 24 has been mounted.

[0039] Moreover, as shown in Drawing 11 through Drawing 14, in the base 24, many slots 40 or protruding lines 41 can be formed in the forward and backward directions of the suction tool main body, and the surface which is mounted with the wiping material 33 of the base 24 as well as the surface that faces this can also be processed as a rough surface consisting of many protrusions and irregularities. In such types of configuration, since the contact area with surfaces to be cleaned such as the carpet etc will now reduce, it is possible to improve the nature of movement.

[0040] In addition, in the first embodiment which has been described above, the base 24 and the wiping material 33 is configured as a separate structure and although the wiping material 33 was made freely detachable in the base 24, it could also be formed wherein the base 24 and the wiping material 33 are unified into a single structure as in the case of the embodiment 2 which has been shown in Drawing 15 and Drawing 16.

[0041] Based on Drawing 15 and Drawing 16, the embodiment of the 2nd working example is described. However, those parts which are the same as the embodiment of the first working example have been assigned the same symbols and the explanations have been omitted.

[0042] 42 is a plate -like pedestal supported in a manner whereby it can be rotated freely in the stowage 17 of the suction tool body 1 and has been formed using a synthetic resin which has very low levels of frictional resistance. 43 is the elastic body which is constituted from an ingredient that has resilience stuck on one side face of said pedestal 42, and uses the so-called piloerected object very similar to the embodiment of the 1st operation.

[0043] 44 is the stop member that is stuck on the side that is contiguous to the said side of the base 42, and similar to the embodiment of the first working example, the tips consist of fibrous objects that are made from synthetic resins which are highly elastic and have been shaped like hooks. 45 is a stopper section which has been pasted in the hollow 46 formed in the surface that is opposite to the surface where the base 42's stopper material 44 has been pasted and is made from the same materials as the said stop material 44.

[0044] 47 is a blanket like object and in the state when the said elastic object 43 has been covered, both ends are connected to the various fibrous objects of the stopper members 44 and 45. The said blanket like object 47 is comprised of materials that have a dust catching as well as a dust retaining nature which is very similar to the embodiment of the 1st working example.

[0045] The wiping material 48 is comprised from the said elastic body 43, the stop members 44 and 45, and a blanket-like object 47.

[0046] On the other hand, when cleaning a surface which require the use of a wiping material, the base 42 is rotated such that the wiping material 48 is located in the bottom surface of the suction tool body 1 and after activating the main vacuum cleaner the suction device body 1 is then operated. The wiping action will be mainly carried out when the suction tool body 1 is moved in the forward direction and in this state a relatively large amount of dust and garbage will be sucked into the suction inlet 7 and not only will minute dust particles and dirt be grabbed by the blanket like object 47 of the wiping material 48, but further any oily material that is stuck to the surface to be cleaned will be grabbed up by the wiping material 48,

[0047] When the blanket-like object 47 gets dirty, the wiping material 48 is then located in the lower surface of the body of the suction tool 1 and after disengaging the connection between the blanket like material 47 and the stopper materials 44 and 45 the blanket like object 47 is then detached and it is replaced with a new blanket like object 47.

[0048] In the rare event when there is no blanket like object 47 that can be replaced, the blanket like object 47 is detached and the wiping action is performed by making the elastic body 43 face the bottom surface of the suction tool body 1. In such a condition, the elastic body 43 comes into contact with the surface to be cleaned and since the elastic body 43 make use of a piloerection cloth, it is possible to wipe up the surface to be cleaned making use of the elastic object 43. Since the base 42 where the wiping material 48 has been installed is constituted in a manner that is freely detachable, after having cleaned the surface with the elastic object 43, the base 42 is removed from the suction device body 1 and it becomes possible to wash the elastic object 43.

[0049] Drawing 17 thru/or Drawing 20 show the embodiment of the 3rd working example of this invention, and is different from the 1st working example as it consider a reverse structure of the base 24. Those parts that are the same as the embodiment of the first working example have been assigned the same symbols and the explanations have been omitted.

[0050] 49 is the control lever supported in a manner whereby it can be freely rotated in the suction device body 1, and has projected the control unit 50 formed in the edge of the body of suction device 1's top surface. 51 is the pivot of a control lever 49 which constructs a belt 52 between the pivotable support shafts 25 of a pedestal 24, transmits rotation of a control lever 49 to the pivotable support shaft 25 of a pedestal 24, and carries out reversal operations of the base 24. 53 is the is a circular face that is formed in the center of the pivot shaft 51 of the said operating lever 49 and the operating lever 49 and the wiping material 33 is made to rotate in a position where these faces the bottom surface of the suction tool body 1 while the base 24 also faces the same suction tool body1's bottom surface. Further the stop object 54 which is elastic and is stuck on to the suction tool body 1 consists of a stop slot 55 that is engaged such that it can be freely detached and after engaging the stop object 54 into the stop slot 55, it becomes possible to regulate the rotations of the operating lever 49 and the base 24.

[0051] In the embodiment of working example 3, it is possible to perform rotations of the base 24 using an operating lever 49 from the top surface of the suction tool body part 1 and to improve its operability. Other operations are the same as the embodiment of working example 1 and the explained has been omitted out.

[0052] The embodiment of working example 4 of this invention is explained in full detail based on Drawing 21 thru/or Drawing 23 . However, those parts which are the same as the embodiment of the first working example have been assigned the same symbols and the explanations have been omitted.

[0053] 56 is the stowage that is set up at the back of the inlet 7 in the bottom surface of the suction device body 1, where one side is opened and from this opening, the base 58 that will be described later is set up/ mounted in the stowage section 56 such that it can be freely detached. 57 is the guide rail formed in the said stowage 56's wall, and the guidance rib 59 of the pedestal 58 mentioned later is engaged, and it is set up such that the base 58 is guided to the stowage section 56.

[0054] The guidance rib 59 is the base made of synthetic resin which has a low frictional resistance nature, and the guidance rib 59 which engages with the guidance slot 57 of the said stowage 56 is formed and the guidance rib 59 is then guided to the guidance slot 57 and is mounted such that it can be reversed in the stowage 56. 60 are the engaged projections shaped approximately as a circle many of which have been formed and the stop member 62 which has been formed in the support section 61 of the wiping material 63 which will be described later has been engaged in a way wherein it can be easily attached and detached.

[0055] 61 is a support section that has been made from synthetic resin, and on one side, the engaged projection 60 of the said base 58 the stop part 62 that is engaged freely has been formed and the support part 61 is mounted on the base 58 such that it can be oscillated/ moved ever so slightly based on the engagement of the stop member 62 to the engagement projection 60. With the said support section 61 being slightly movable in the base 58, the wiping material 63 that will be described later can now be made to match any irregularities present on the floor surface. The wiping material 63 has been constituted using the said support section 58, the elastic body 31 and the blanket like object 32.

[0056] In the embodiment of working example 3, by mounting the support section 58 by reversing it in the stowage 56, we have two possible situations, one, where the wiping material 63 has been exposed in order to clean flooring etc and the other when the wiping material 63 is drawn in when cleaning a carpet etc. Other operations are the same as the embodiment of working example 1 of this invention and have therefore been omitted.

[0057] The embodiment of working example 4 of this invention is explained in full detail based on Drawing 24 thru/or Drawing 25. However, those parts that are the same as the embodiment of the first working example have been assigned the same symbols and the explanations have been omitted.

[0058] 64 is a base made from a synthetic resin which has a low frictional resistance nature, and the pivotable support shaft 65 which has been formed on one end is then rotated freely in the stowage 66 which has been formed as the bottom surface of the suction device body 1 while in another end, the wiping material is mounted in a fashion whereby it can be freely detached. The said base 64 rotates between the location where the wiping material 33 was housed in the said stowage 66 and the wiping material 33 faces the bottom of the said suction device body 1 and through this position which is formed in between the two walls of the stowage 66 but in not shown in the drawing, the wiping material 33 is now positions facing the bottom surface of the suction tool body 1 as shown in Drawing 25 while the wiping material 33 is positioned in the stowage 66 as shown in Drawing 24.

[0059] As shown in Drawing 25, the said wiping material 33 when rotated at the position facing the bottom surface of the suction tool body 1 will be positioned at the bottom of the rotation brush 9 and while the wiping material 33 is located beneath the lowest positions of the front and the real wheels 34 and 35, when the wiping material is rotated in a position within the stowage 66 as has been shown in Drawing 24, one surface of the base 64 will in fact be located above the bottom surface of the suction tool body 1.

[0061]

[Effect of the Invention] Based on the configuration of claim 1 of this invention, it is possible to prevent overloading of the vacuum cleaner as also any damage to the surface area to be cleaned and it is also possible to sweep and collect the dust at the same time thereby effecting the cleaning operation resulting in an improvement of the cleaning efficiency. Further while cleaning a carpet, the dirt that is stuck to the blanket like object can be prevented form now adhering to the carpet that is being cleaned. Moreover, the support shaft of the base that is equipped with the blanket like object is set up in a position that is eccentric in the base and since the shorter arm rotates the stowage section, it is also possible to shorten the height of the stowage while also preventing the narrowing down of the inlet passage and in this way the invention offers the effect of controlling any reduction of the suction efficiency.

[0062] According to the configuration of claim 2 of this invention it is possible to prevent overloading of the vacuum cleaner as also any damage to the surface area to be cleaned, and it is also possible to sweep and collect the dust at the same time thereby effecting the cleaning operation resulting in an improvement of the cleaning efficiency. Further while cleaning a carpet, the dirt that is stuck to the blanket like object can be prevented form now adhering to the carpet that is being cleaned. Moreover, since the body of the suction device is strongly pushed against the surface area that is being cleaned at the time of pushing, the wiping action will mainly be carried out at the time of pushing and since the base is inhibited from moving at the time of the pushing operation on account of the inhibiting means, the base no longer moves unnecessarily and the area to be cleaned is not damaged in any way.

[0063] According to the configuration of claim 3 of this invention it is possible to prevent overloading of the vacuum cleaner as also any damage to the surface area to be cleaned, and it is also possible to sweep and collect the dust at the same time thereby effecting the cleaning operation resulting in an improvement of the cleaning efficiency. Further while cleaning a carpet, the dirt that is stuck to the blanket like object can be prevented form now adhering to the carpet that is being cleaned. Moreover, the wiping material can be detached from the base and the wiping material could either be replaced or washed and in this manner a high cleaning capability can be maintained for a longer period of time. In addition, the support shaft of the base that has been equipped with the wiping material is now set up in an eccentric position in the base, and since it shorter arm rotates the interior of the stowage, it is also possible to shorten the height of the stowage while also preventing the narrowing down of the inlet passage and in this way the invention offers the effect of controlling any reduction of the suction efficiency.

[0064] According to the configuration of claim 4 of this invention it is possible to prevent overloading of the vacuum cleaner as also any damage to the surface area to be cleaned, and it is also possible to sweep and collect the dust at the same time thereby effecting the cleaning operation resulting in an improvement of the cleaning efficiency. Further while cleaning a carpet, the dirt that is stuck to the blanket like object can be prevented form now adhering to the carpet that is being cleaned. Moreover, the wiping material can be detached from the base and the wiping material could either be replaced or washed and in this manner a high cleaning capacities can be maintained for a longer period of time. Further, since the body of the suction device is strongly pushed against the surface area that is being cleaned at the time of pushing, the wiping action will mainly be carried out at the time of pushing and since the base is inhibited from moving at the time of the pushing operation on account of the inhibiting means, the base no longer moves unnecessarily and the area to be cleaned is not damaged in any way.

[0065] According to the configuration of claim 5 of this invention it is possible to prevent overloading of the vacuum cleaner as also any damage to the surface area to be cleaned, and it is also possible to sweep and collect the dust at the same time thereby effecting the cleaning operation resulting in an improvement of the cleaning efficiency. Further while cleaning a carpet, the dirt that is stuck to the blanket like object can be prevented form now adhering to the carpet that is being cleaned. Moreover, by having a configuration wherein the wiping material can be freely attached to and detached from the pivotable shaft of the base, not only is it possible to simplify the attachment and the detachment process but further the wiping material can be removed form the base and can be either replaced or washed and we now have a configuration whereby high cleaning capacities can be maintained for a longer period of time

[Brief Description of the Drawings]

[Drawing 1] It is a cross sectional view of the exposed wiping material that is shown in the embodiment of the working example 1 of this invention.

[Drawing 2] It is a cross sectional view of the condition of housing/being equipped with this said wiping material.

[Drawing 3] It is the bottom view showing the state of having exposed this wiping material.

[Drawing 4] It is the bottom view showing the condition of having housed/ stored this wiping material.

[Drawing 5] It is the sectional view seen from other directions that shows the condition of having exposed this wiping material.

[Drawing 6] It is the sectional view seen from other directions that shows the condition of having housed/ stored this wiping material.

[Drawing 7] It is an expanded cross sectional view of the important sections of the same.

[Drawing 8] It is a cross sectional diagram that explains the attachment and detachment of the base.

[Drawing 9] It is a bottom view explaining the attachment and detachment of the base

[Drawing 10] It is this side elevation of the same.

[Drawing 11] This is a cross sectional view showing the embodiment of the working example of this invention.

[Drawing 12] It is the view of the bottom surface.

[Drawing 13] This is a cross sectional view seen from other directions.

[Drawing 14] This is a cross sectional view showing the embodiment of the working example of this invention.

[Drawing 15] This is a cross sectional view showing the embodiment of the 2nd working example of this invention that explains the attachment and detachment of the wiping material.

[Drawing 16] It is a cross sectional view showing the condition of having installed this wiping material.

[Drawing 17] This is a cross sectional view showing the exposure of the wiping material in the embodiment of working example 3 of this invention.

[Drawing 18] This is a cross sectional view which shows this wiping materials having been housed.

[Drawing 19] This is a cross sectional view which shows the condition of having removed this wiping material.

[Drawing 20] This is a cross sectional view seen from the other directions

[Drawing 21] This is a cross sectional view showing the exposure of the wiping material in the embodiment of working example 4 of this invention.

[Drawing 22] This is a cross sectional view which shows this wiping materials having been installed.

[Drawing 23] This is a drawing of the bottom surface.

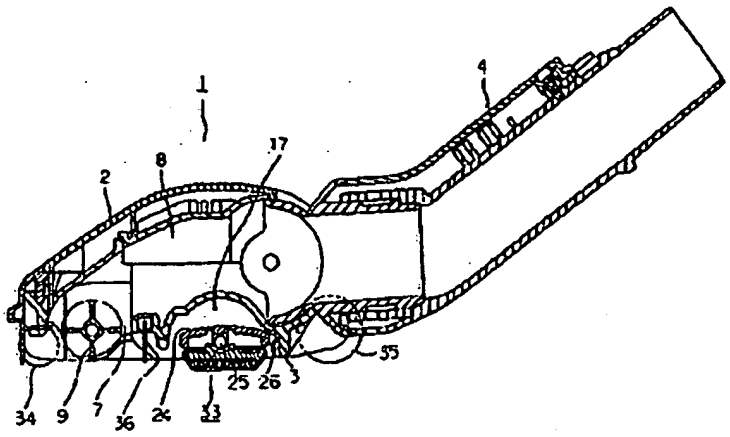
[Drawing 24] This is a cross sectional view showing the exposure of the wiping material in the embodiment of working example 5 of this invention.

[Drawing 25] It is a cross sectional drawing showing the condition of having exposed this wiping material.

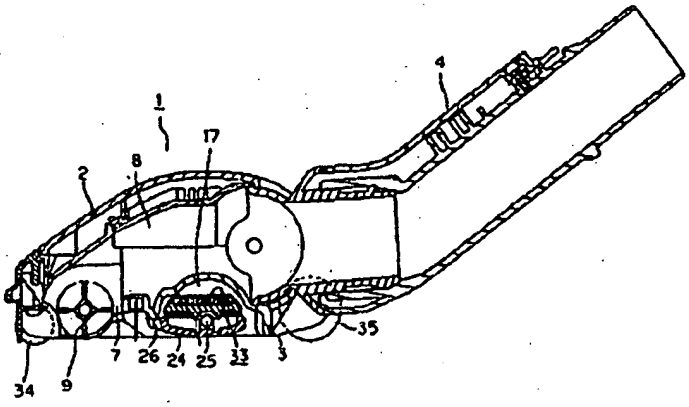
[Description of Notations]

1 Body of Suction device
7 Inlet
17 Stowage
24 Base
25 Pivotable Support Shaft
26 Projected Part
27 Support section
33 Wiping material

Drawing 1



Drawing 2



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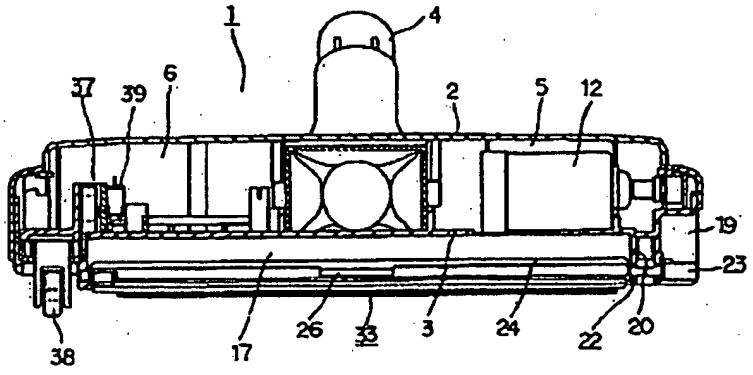

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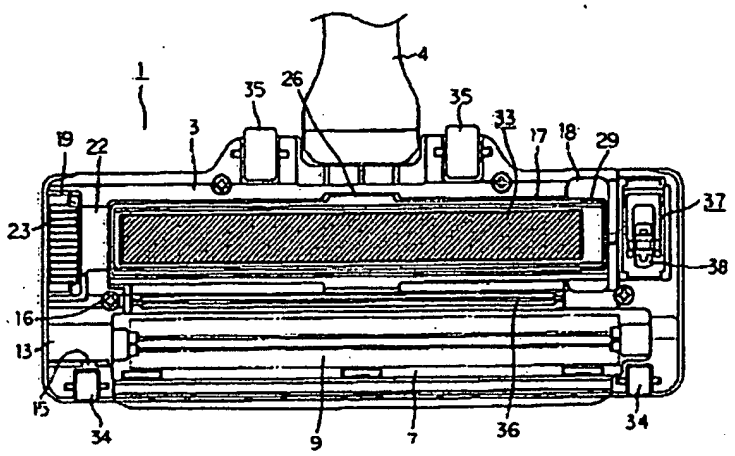

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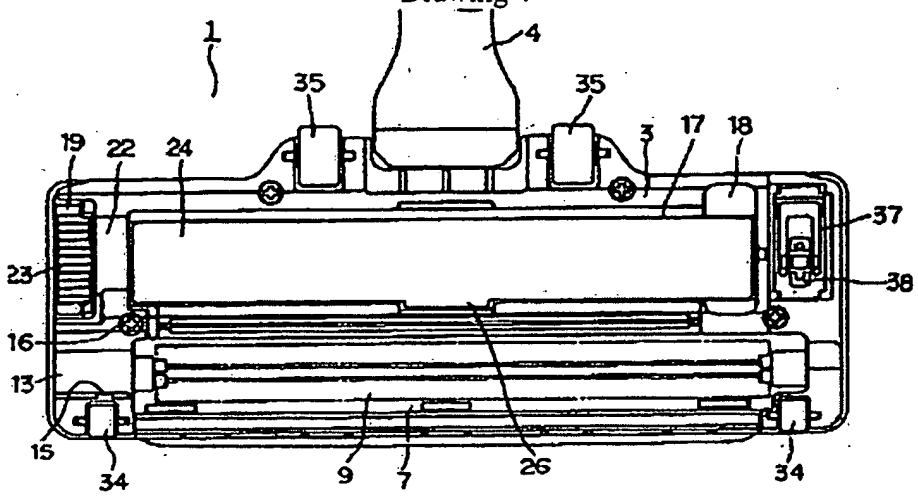

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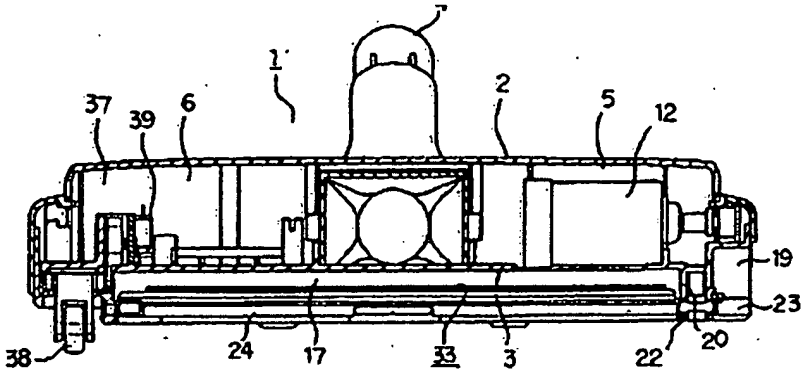
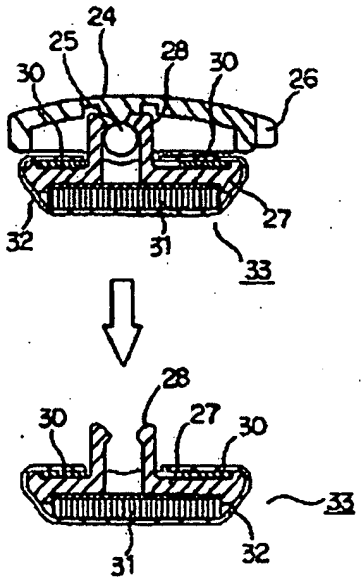
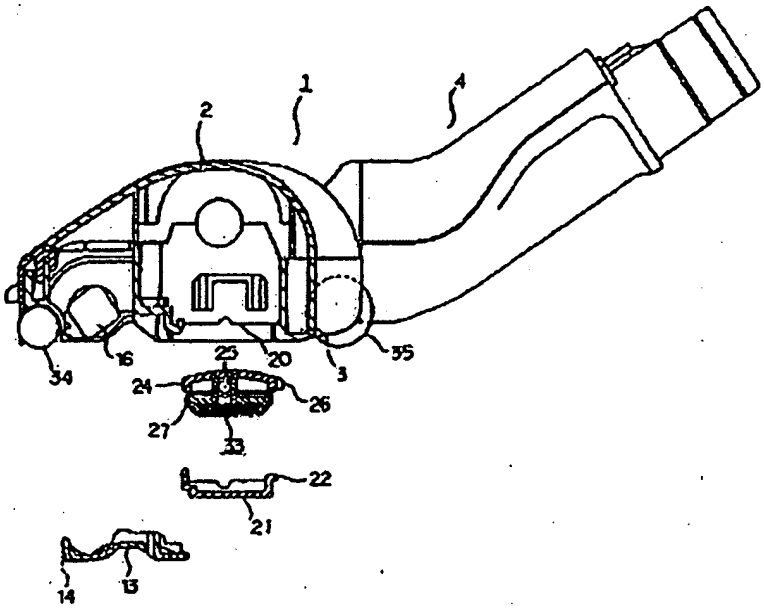


【図7】 Drawing 7



【図8】 Drawing 8



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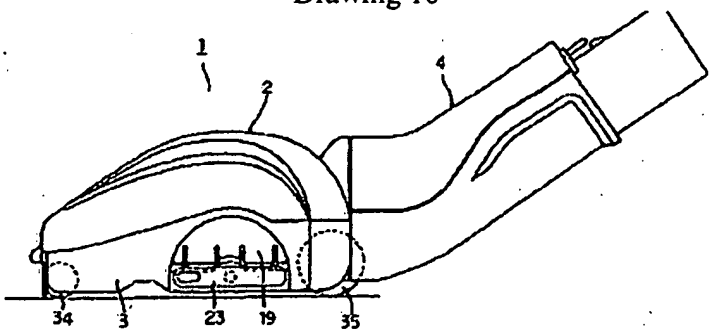

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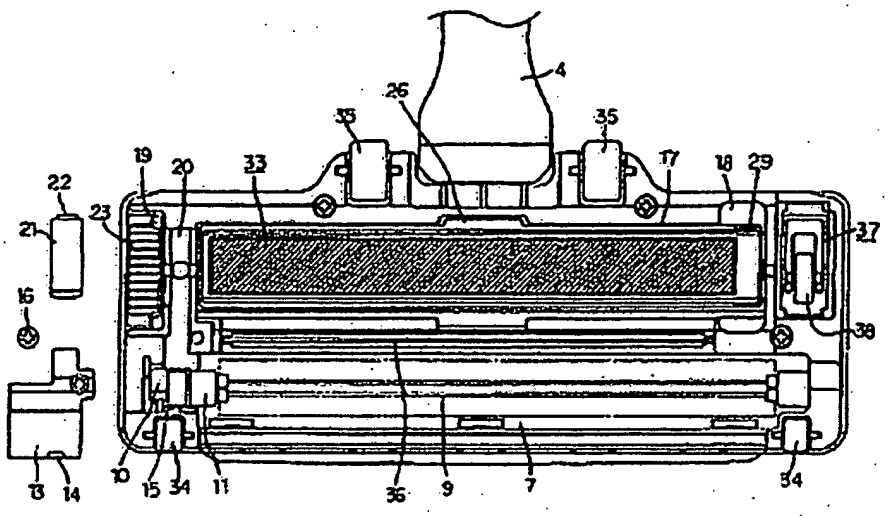

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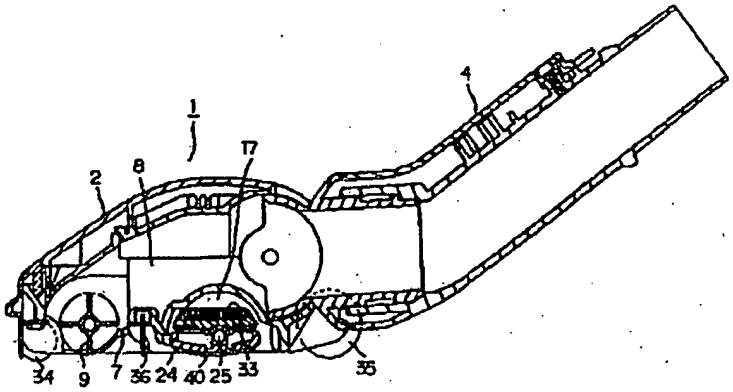

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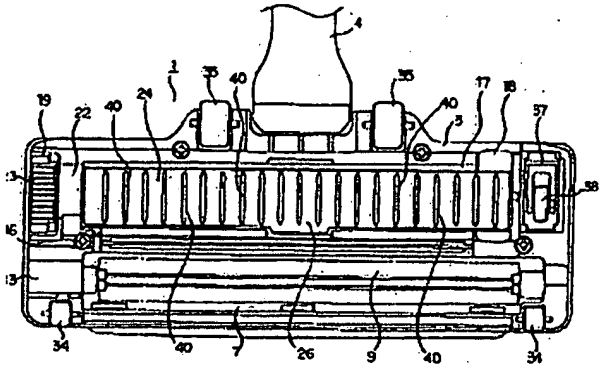

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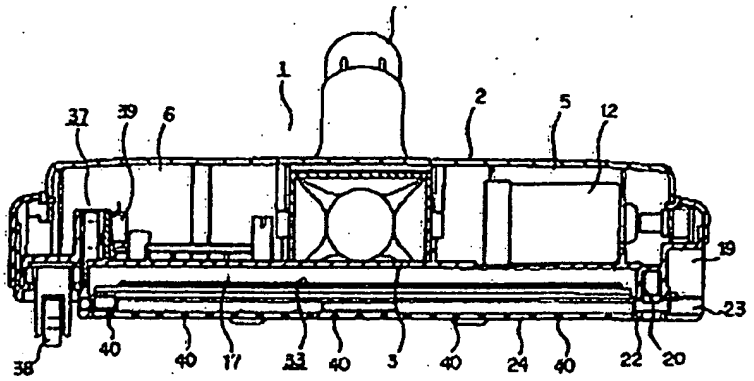

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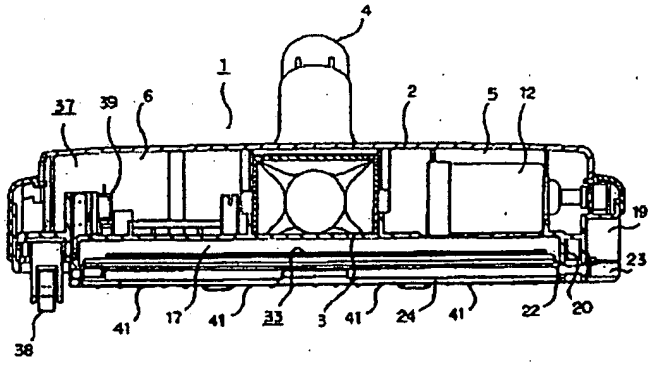

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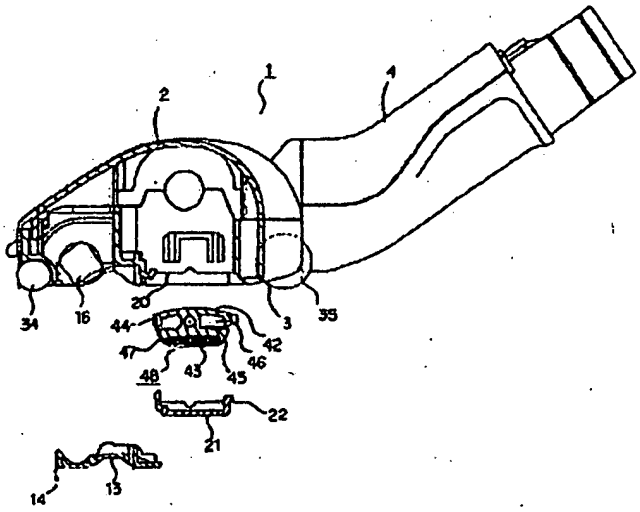

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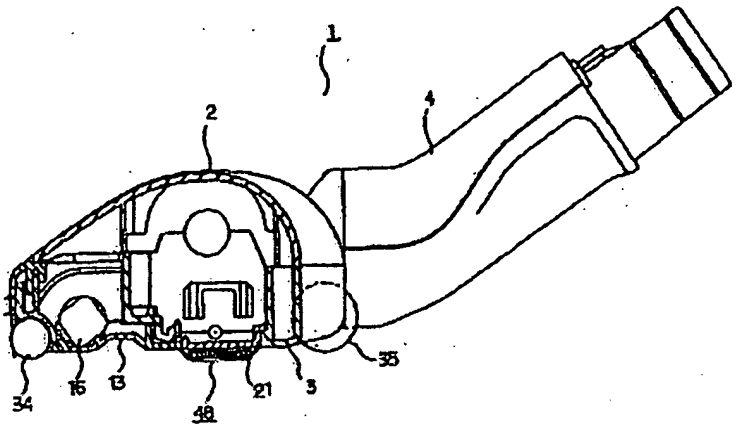

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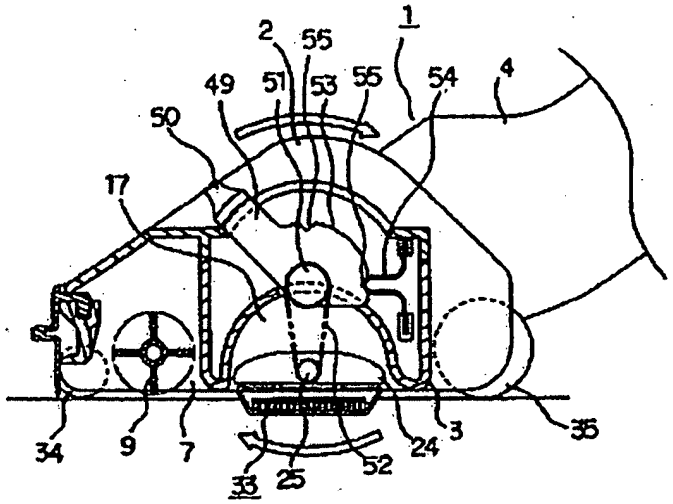

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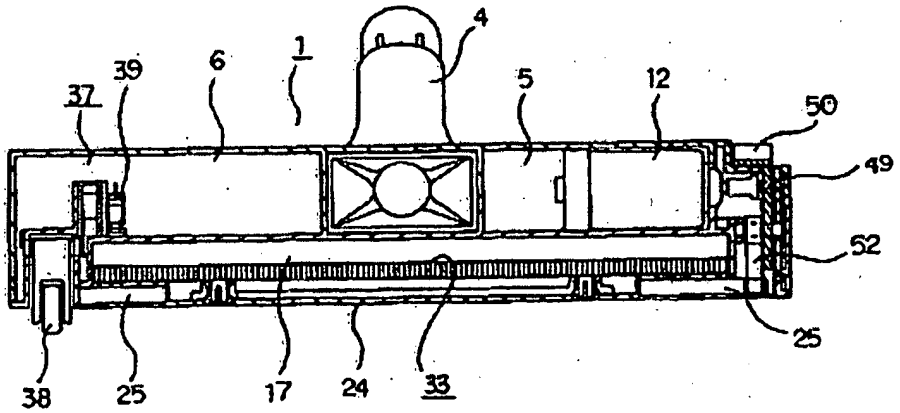

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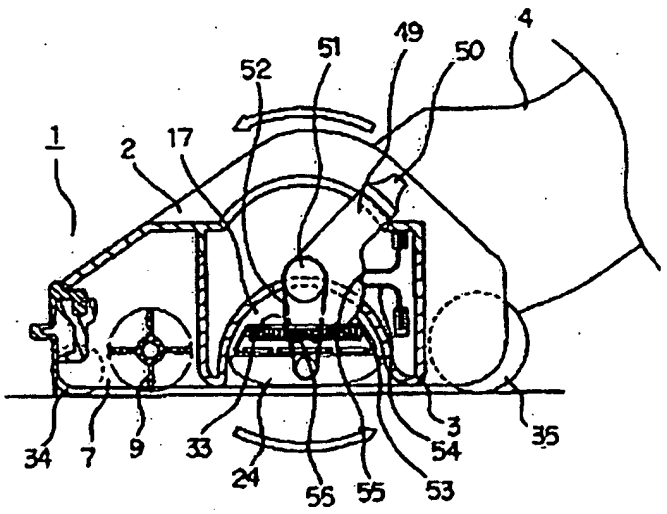

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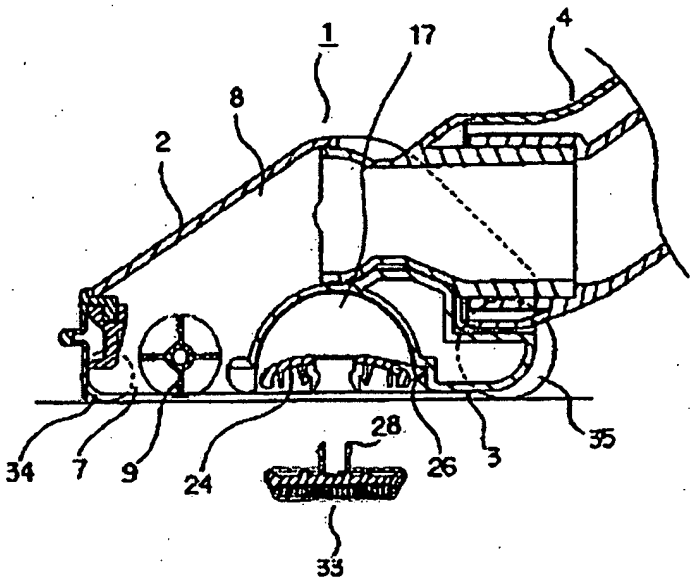

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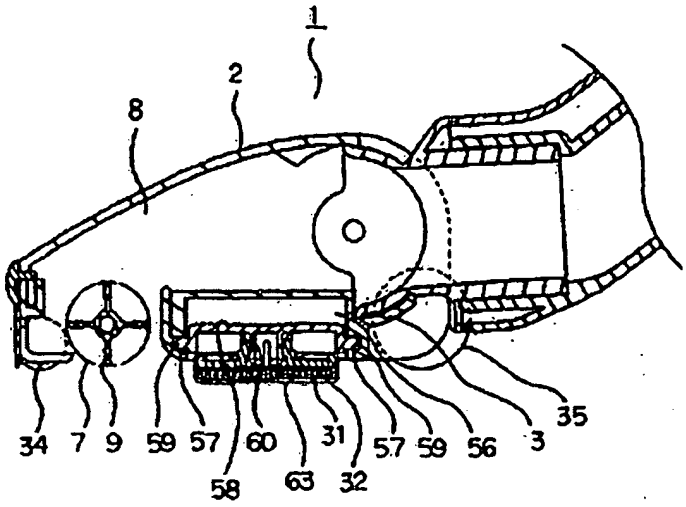

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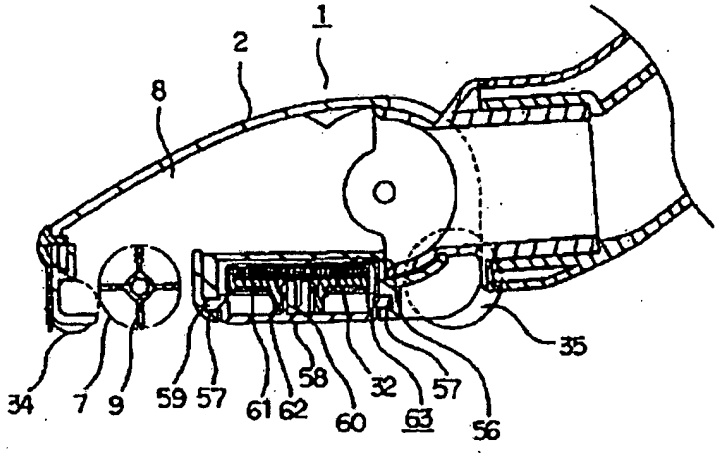

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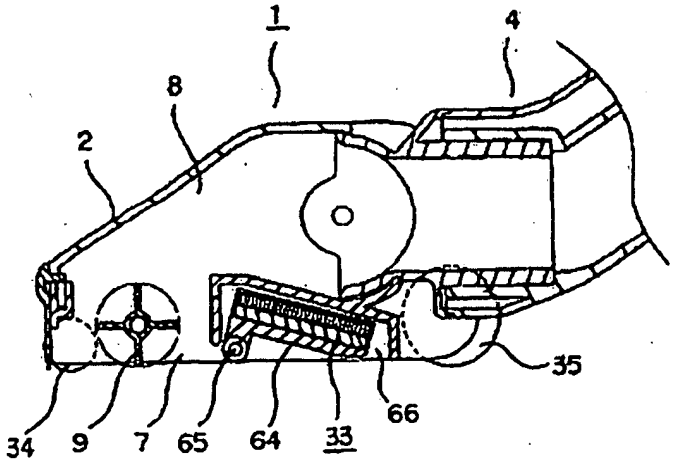

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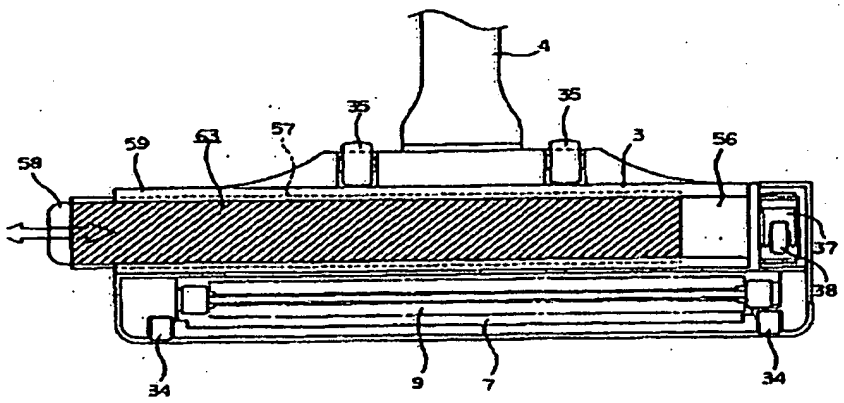

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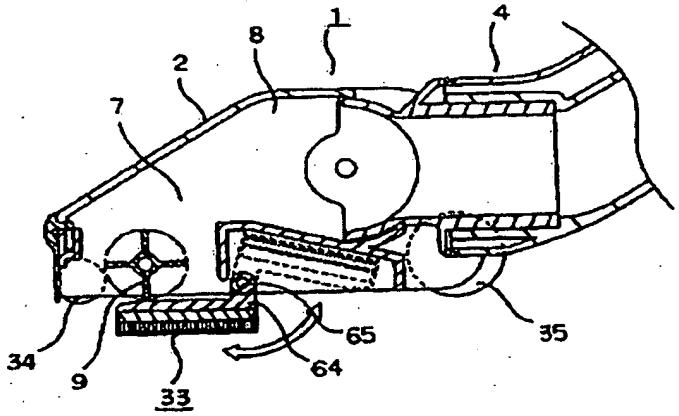

Continued from the first page

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